FIRST IN THE FIELD!

Offshore

The Marine Oil OPERATIONS Journal

Sulphur Mining In The Gulf of Mexico (See Page 42)

"Reed bit quality was best in 1933 and it's best today . . . thanks to Reed research"

The man talking is I. N. Tower, a specialist in heat treating. He speaks with the authority of 25 years experience with Reed—a period during which heat treating, to increase durability and dependability of rock bits and other oil tools, has truly come of age.

Heat treating at Reed today includes many operations—each an exacting process arrived at through exhaustive metallurgical research.

Here Mr. Tower describes an important heat treating operation—the carburizing process which will be applied to the Reed Y Bit lugs you see in the foreground. The man listening is his son I. N. Tower, Jr., himself a veteran of 15 years at Reed, who welds lugs like these together to make bodies for Reed Y Bits.

Mr. Tower has seen Reed research in metallurgy pace the industry—from "eye ball" control to precise metallurgical specifications—from the first unitized rock bit to today's Y Bit.

Making use of the most up-to-date facilities, Reed's advanced heat treating methods, applied by skilled, experienced technicians like I. N. Tower, build extra quality into every Reed product you use.

Modern methods, experienced men, and untiring research—these are vital factors contributing to the unfailing high standard of Reed quality. That standard, today exemplified by the Reed Y Bit, remains unexcelled.

Reed Roller Bit Company

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Heat Treat Leadman I. N. Tower, shown talking with his son, has been with Reed 25 years. His son, welder I. N. Tower, Jr., has been with the company 15 years.

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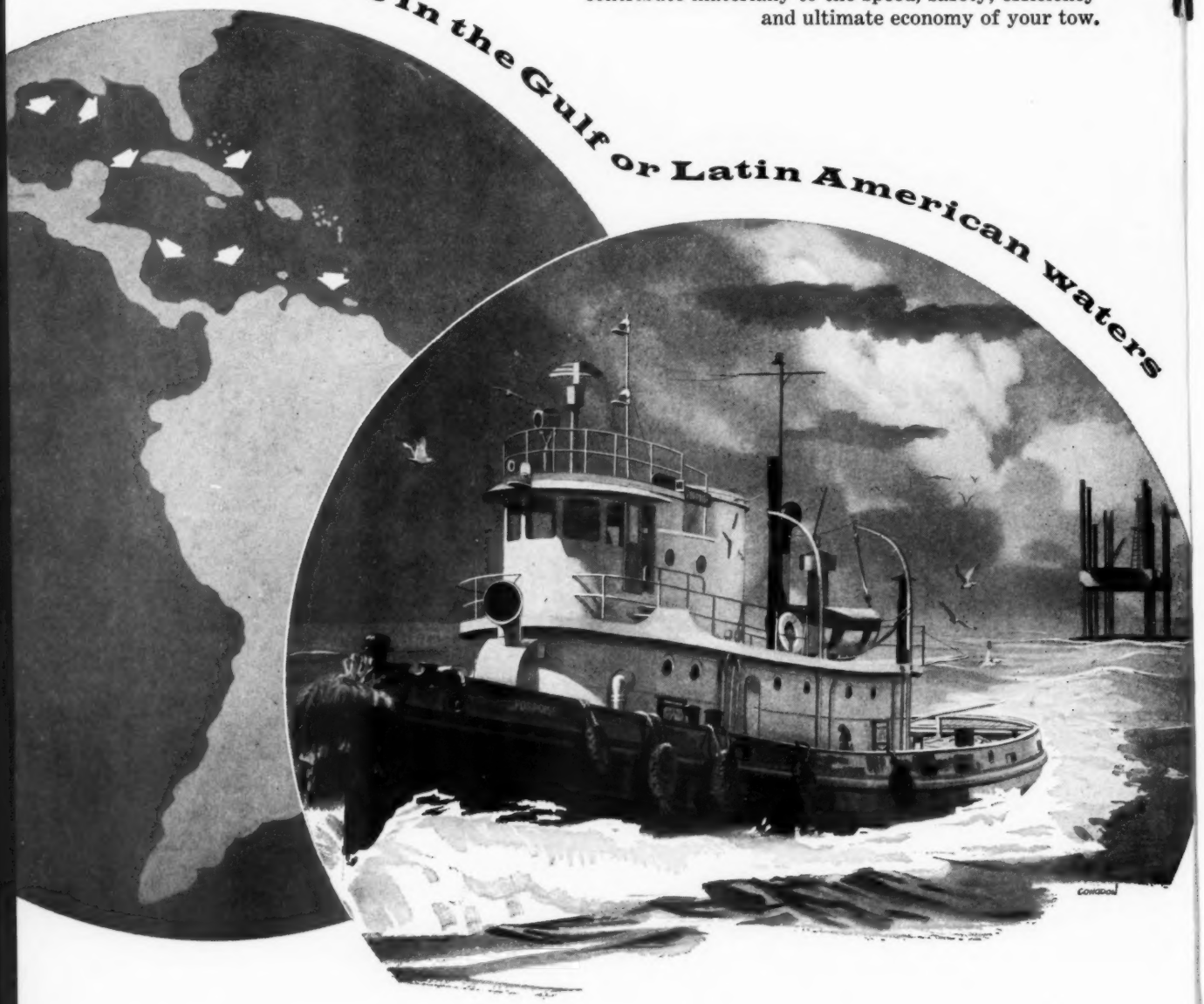

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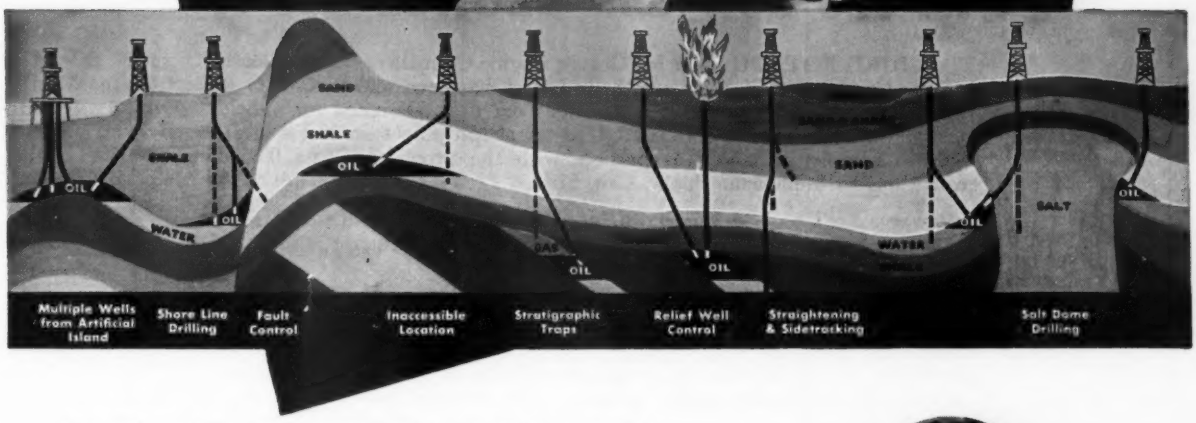

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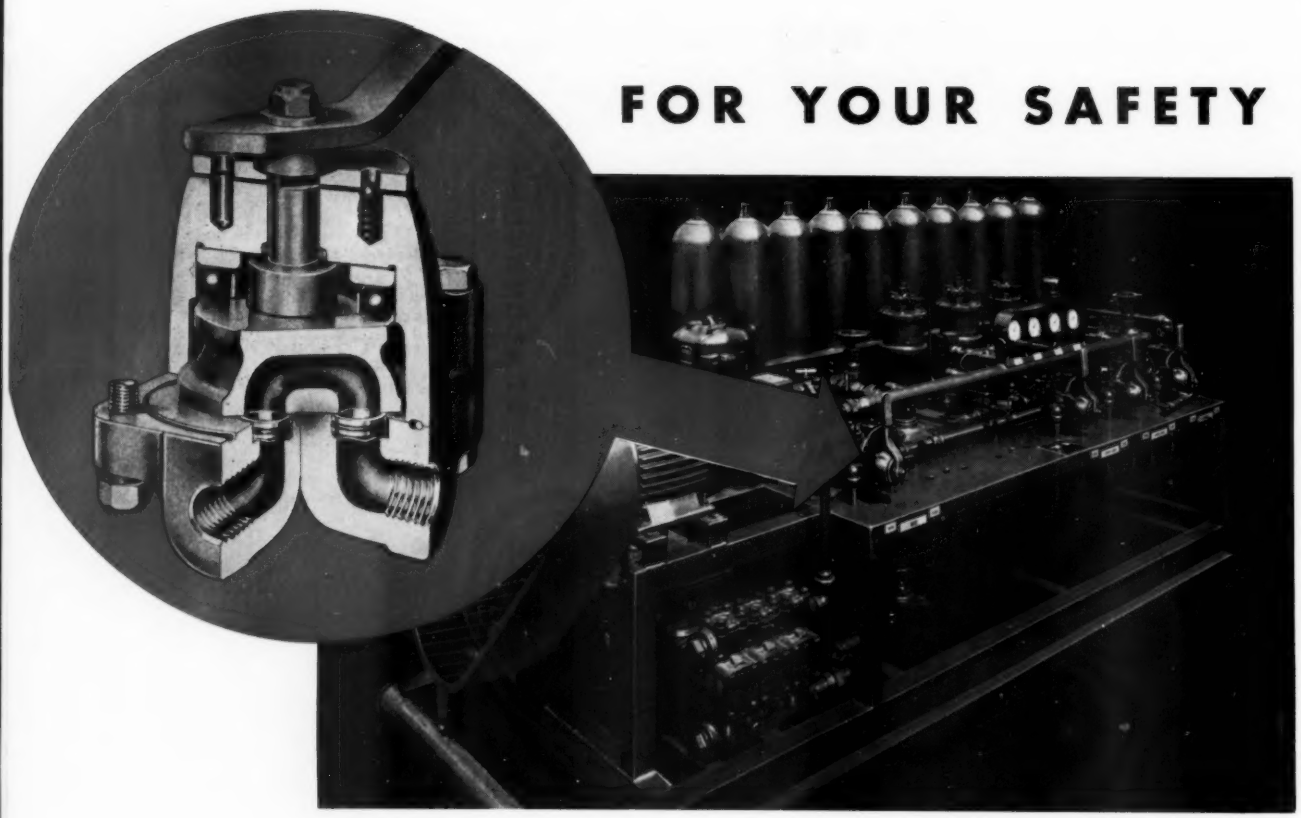

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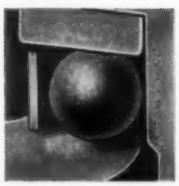

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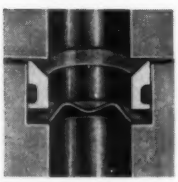

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Bailey Equipment Co., 3856 California St., San Diego 1.

IN LOUISIANA:

Standard Supply & Hardware Co., 822 Tehoupitoulas St., New Orleans 7.

IN TEXAS:

Johnson-Heyck, Inc., 430 West Bldg., Houston 2.

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Oil Man's Calendar

MARCH

5-6 Gas Conditioning conference, sponsored by the University of Oklahoma, Oklahoma Memorial Union Building, Norman, Okla.
5-7 American Petroleum Institute Oil Information Committee meeting. St. Francis Hotel, San Francisco.
7-8 American Association of Petroleum Geologists, Pacific section annual meeting. Ambassador Hotel, Los Angeles.
10-13 American Association of Petroleum Geologists and Society of Economic Paleontologists and Mineralogists, forty-third annual meeting. Biltmore Hotel, Los Angeles.
12-14 American Petroleum Institute, Division of Production, southwestern district meeting. Hotel Texas, Fort Worth.
17-19 National Industrial Conference Board, sixth annual conference on atomic energy. Palmer House, Chicago.
17-21 International Atomic Exposition, Inc., 1958 Nuclear Congress. Chicago Amphitheatre, Chicago.
17-21 National Association of Corrosion Engineers, annual conference, civic auditorium, San Francisco.
20 National Industrial Conference Board, general session. Statler-Hilton Hotel, Dallas.
20-21 Society of Petroleum Engineers of American Institute of Mining, Metallurgical, and Petroleum Engineers, regional conference on production and reservoir engineering. Mayo Hotel, Tulsa.
31-April 2 American Petroleum Institute, Division of Transportation, annual pipeline conference. Jung Hotel, New Orleans.

APRIL

1-3 University of Oklahoma, Fifth annual conference on corrosion control. Extension Study Center, Norman, Oklahoma.
2 American Petroleum Institute, Division of Transportation, annual pipeline conference, Jung Hotel, New Orleans.
9-11 American Petroleum Institute, Division of Production, Mid-Continent district meeting. Biltmore Hotel, Oklahoma City.
13-18 American Chemical Society, 133rd national meeting. San Francisco, California.
15-17 University of Oklahoma, thirty-fourth annual gas measurement short course. North Campus, Norman, Oklahoma.
17 National Industrial Conference Board, meeting of the Board members. Waldorf-Astoria Hotel, New York City.
17-18 American Institute of Mining, Metallurgical, and Petroleum Engineers, Louisiana-Arkansas, East Texas, and Mississippi petroleum sections, gas technology symposium. Shreveport, Louisiana.
27-29 Independent Petroleum Association of America, midyear meeting. Hotel Sherman, Chicago.
28-29 University of Oklahoma, third annual conference on automatic control in the petroleum and chemical industries. Oklahoma Memorial Union Building, Norman, Oklahoma.
28-30 Southern Gas Association, annual convention. Dallas, Texas.

MAY

4-7 LPGA annual meeting. Conrad Hilton Hotel, Chicago.
5-6 Society of Petroleum Engineers of AIME, 3rd biennial Secondary Recovery Symposium. Wichita Falls, Texas.
5-9 American Petroleum Institute safety and fire protection committee, 11th midyear meeting. Cosmopolitan Hotel, Denver.
12-15 American Petroleum Institute Division of Refining, midyear meeting. Statler Hotel, Los Angeles.
14-16 American Petroleum Institute Division of Finance and Accounting, midyear meeting. Shamrock-Hilton Hotel, Houston.
15-16 National Industrial Conference Board, general session. Waldorf-Astoria Hotel, New York City.
19-23 National Fire Protection Association, annual meeting. Palmer House, Chicago.
21-23 American Petroleum Institute Division of Marketing, midyear meeting. Roosevelt Hotel, New Orleans.
22-23 American Petroleum Institute, Division of Production, Pacific Coast district meeting. Biltmore Hotel, Los Angeles.

JUNE

4-6 American Petroleum Institute, Oil Information Committee meeting. Sheraton Hotel, Chicago.
8-11 American Petroleum Institute, Division of Transportation, annual tanker conference. Greenbriar Hotel, White Sulphur Springs, W. Va.
8-13 American Petroleum Institute, Division of Production, midyear committee conference. Hollywood Beach Hotel, Hollywood, Florida.
23-25 Interstate Oil Compact Commission, midyear meeting. Hotel Utah, Salt Lake City, Utah.

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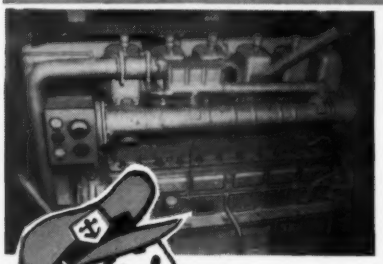

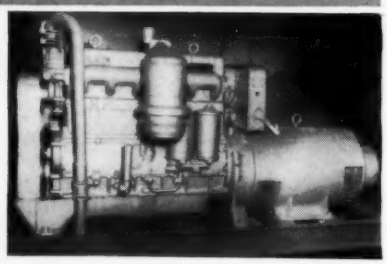

Left — MAIN ENGINES
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Right — GENERATORS
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Way Offshore . . .

With the Publisher

YOU blue-water rascals with the rotating tool joints can just haul up your drill pipe and hunt a new location. The publisher of this-here oily rag has done hit pay, with not one but two wildcats—both novels!

Now, we know you'll think we ought to have a Schlumberger run on our head, but that's not a gasser you hear blowing. It's the honest-to-gospel truth! A dad-blamed literary agent up in New York—bless his dually-completed wonderful hide!—has just hauled off and peddled a couple of Latham yarns to book publishers.

To fill you in from spudding-in to pay sand, one will be published as a pocketbook (so you can buy 'em by the dozen), but the other will be a regular hard-backed book—selling for $3.50 per barrel, or copy, it says right here in the contract. Both will be on the market this fall.

If you're wondering how a man can push tools on an offshore magazine (there's a kelly on my dictating machine), and write yarns all at the same time—it ain't easy!

Actually, these two sales are just like going back into a duster drilled ten years ago, and turning the danged thing into a field discovery. It was 1950 when I wrote one of those stories (which ran first in a magazine), and way back in '48 or '49 when the other was written.

But if I'd knowed I was making all that money back then, when I was real young and full of barites and vinegar, the market would probably be flooded by now—and I'd be held up as a menace to the writing industry!

So, we'll sign off and see you real soon—on a couple of book covers!

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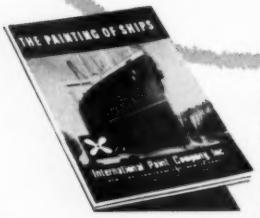

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The Tax Payer . . .

Oil Industry's New Ally

The 513,814 barrel cut in Texas oil allowable for March, the 48,140 barrel Louisiana allowable cut, and the predicted Oklahoma, New Mexico, Kansas and Mississippi production cuts may not be all bad news for the oil industry. Though it means a decreased revenue for oil operators and royalty owners, and a further depressing of the oil and gas industry in general, it also means two million dollars a month out of the treasury of the State of Texas, and $360,000 a month loss from the treasury of Louisiana. And it will mean like amounts lost to every state that has to cut allowables to prevent ruinous over supply of oil in their state.

These states will then be forced to raise their taxes on the other citizens in order to make up the deficit that the oil industry is no longer able to pay.

When the revenue from taxes on oil and gas production is taken away a substitute must be found, either in increased corporate, property, excise, or personal income taxes. Probably a starting of these taxes in states that don't have them and an increase in all four, in the states already using them.

Twenty-two percent of the income of the State of Texas is derived from taxes on oil production. Something like 216 million dollars in taxes a year is derived from oil, not counting the 85 million dollars that goes to the state supported schools from oil royalties.

When that 216 million dollars starts to dwindle as it is doing now and has done for several months, the difference between the state's income and out go will have to be made up out of everyone's pocket, probably in the form of a state income tax.

This will be a dear lesson to learn for the average citizen, in as well as outside the industry. But it will drive home the point as nothing else could, how closely the welfare of the people, of oil producing states and the United States as a whole, is tied to the welfare of the oil industry.

Once brought home hard to the pocketbook this lesson will make willing allies out of people who formerly mistrusted and disbelieved the oil industry. And like the United States, the oil industry needs all the allies it can get to help solve the many problems confronting producers and to help keep the industry strong.

These new found allies will be a big help in getting needed legislation passed and harmful legislation prevented. But unless the oil industry gets together and decides on an imports solution that everyone can live with, the new allies will wind up as splintered as the industry, thus canceling out each other and leaving the industry worse off than ever.

Right now the industry is in a position to gain friends and win support. Every tax payer in every oil producing state is going to start listening intently for solutions that will help the oil industry get back to paying a large part of the bills.

The oil industry now has the floor and a very receptive audience. Can it speak in one voice, resulting in one program mutually beneficial to all, including its new allies?

The Editor

If you have been paying about 25¢ a barrel for fresh water

WASTE HEAT ∨ EVAPORATION CAN SAVE YOU THOUSANDS OF DOLLARS A YEAR

seawater

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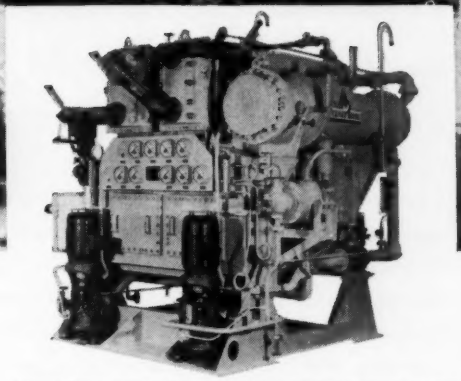
93% less* cost than multi-effect

94% less* cost than purchased water

*Based on field studies made by Cleaver-Brooks engineers. See cost analysis below.



Cleaver-Brooks helps you convert waste diesel heat to working energy

FIELD checks show that compared with the three commonly used methods of producing fresh water on board drill rigs, barges and tenders—waste heat evaporation *costs you practically nothing.*

Based on the chart below, operational daily costs per 685 barrels can be trimmed as much as 94%, if you're now buying fresh water. Add to this the all-important fact that low-pressure operation of Cleaver-Brooks waste heat evaporators *practically eliminates scale formation* and drastically cuts expensive downtime.

The latent power of waste diesel heat is a hidden asset worth investigating. Models available to deliver fresh water at rates of 300 gph to 2100 gph. We invite your inquiries. Write today for complete information. Cleaver-Brooks Company, Special Products Division, 225 Grand Ave., Waukesha, Wisconsin, U.S.A., Cable Address: CLEBRO — Waukesha — Dept. 038.

Here's how waste heat goes to work for you: (1) Hot water from diesel's cooling system circulates through engine cooling heat exchangers — carrying sea water. (2) Heat is transferred to the sea water. (3) As sea water flows into the evaporator vacuum chamber, part of it "flashes" to steam because of lower pressure . . . is then condensed on cooling coils. (4) Thus, fresh water is produced at rates depending on evaporator size and available diesel power.

Waste Heat Evaporators vs. Vapor Compression vs. Multiple Effect vs. Purchased Water

ITEM	UNIT PRICE	Typical Cost/1000 gal H_2O Waste Heat	Vapor Compression	Multi-Effect	Purchased
Diesel Fuel	@ 10.6¢/gal	$0.00	48¢	$4.80	
Electricity for pumps	@ 1¢/kw	20¢	1¢	14¢	
Lubricating Oil	@ 77¢/gal	½¢	6¢	½¢	
Acid for Descaling	@ 50¢/gal	½¢	20¢	½¢	
Maintenance and Repairs	Based on Field Experience	2¢	18¢	2¢	
Operational Labor	@ $2.50 hr	10¢	85¢	75¢	
Operational Costs (1000 gal)		33¢	$1.78	$5.72	
Operational Costs (barrel)		1½¢	7½¢	24¢	25¢
Operational Daily Costs (685 barrels)		$10.28	$51.38	$164.40	$171.25

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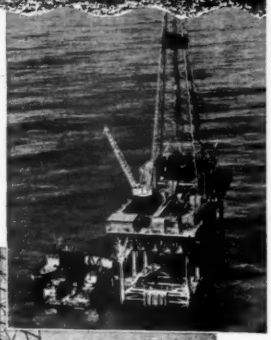

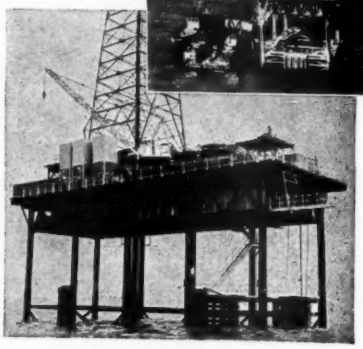

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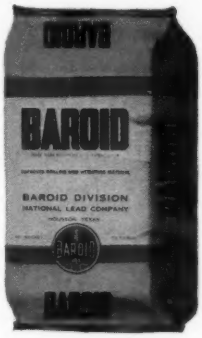

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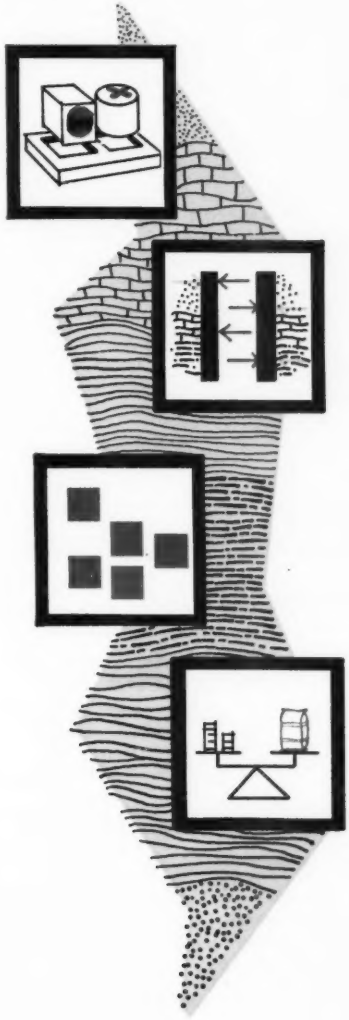

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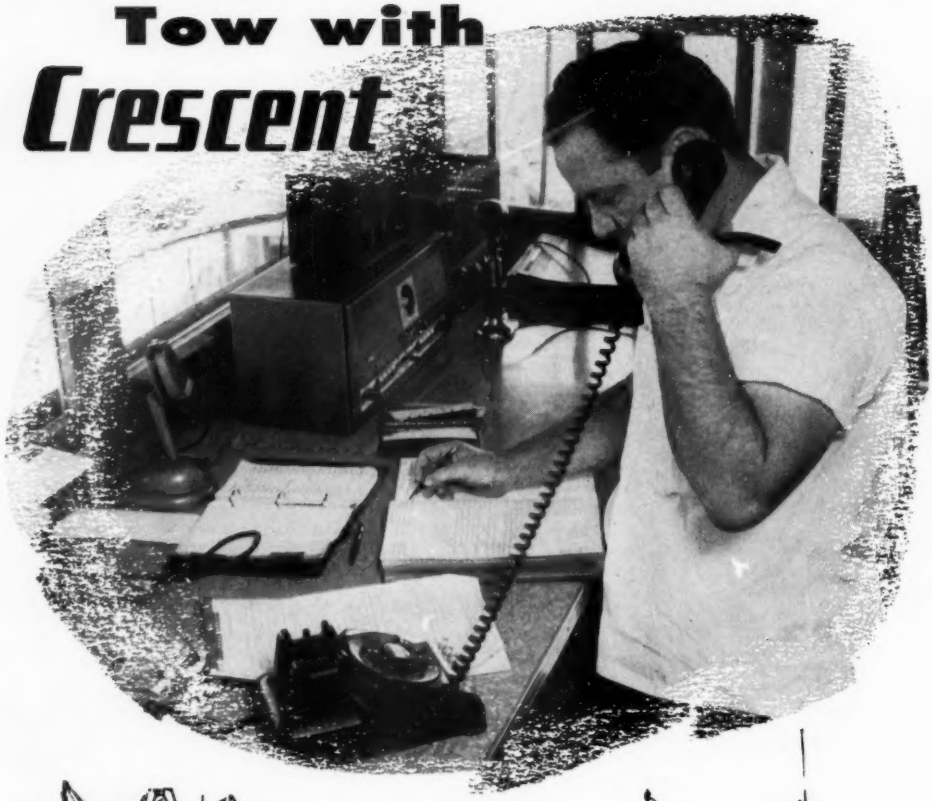

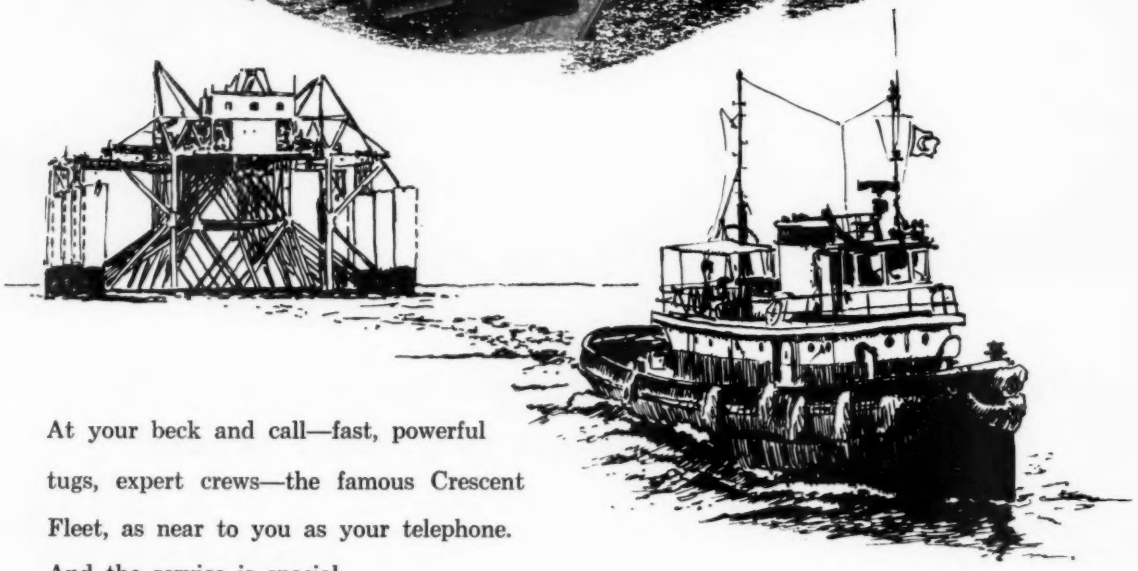

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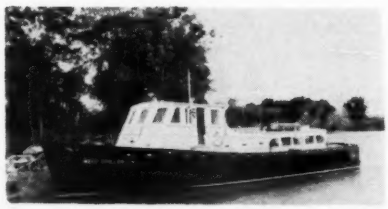

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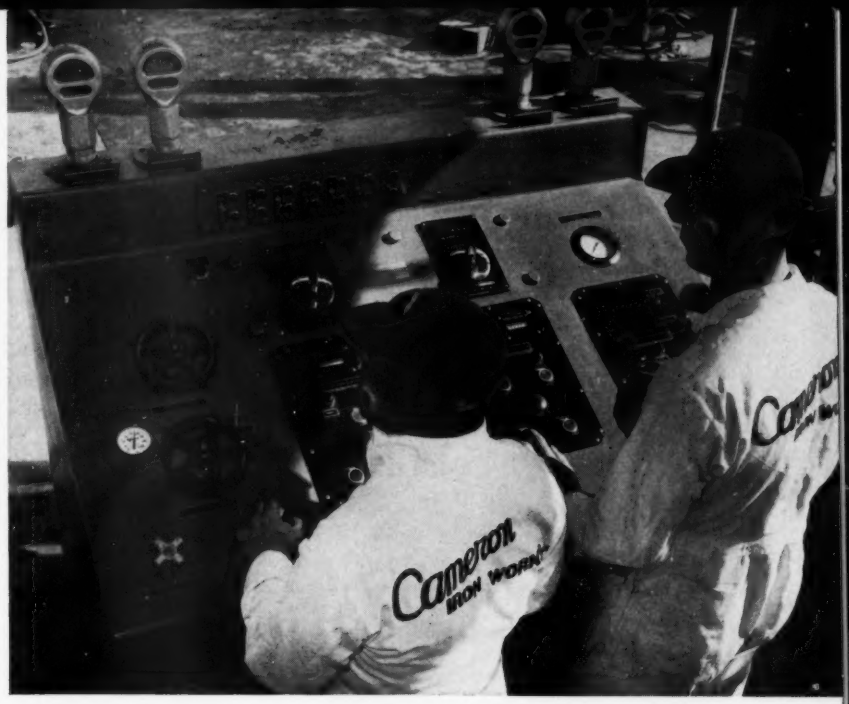

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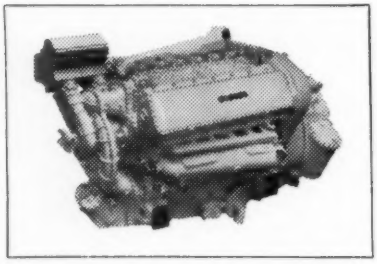
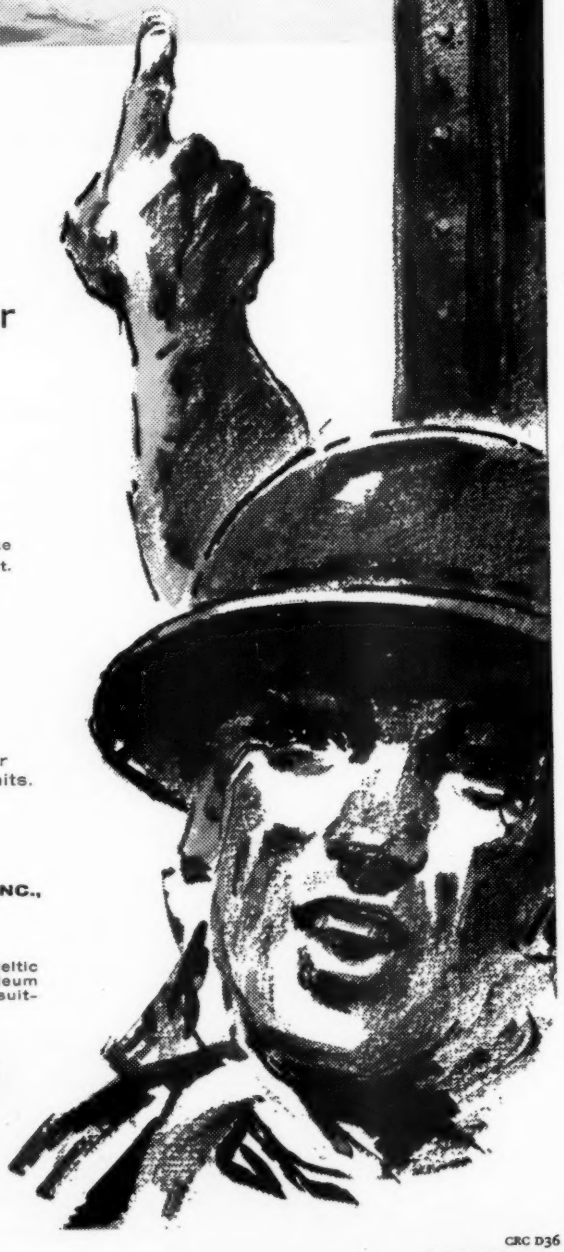


Napier Deltic 18-cyl. opposed piston. 2-stroke diesel marine power unit.



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The boat illustrated is one of the fleet of Thornycroft-built, twin Deltic powered, 50-passenger crew launches operated b the Shell Petroleum Company on Lake Maracaibo. Plans of Deltic powered crew boats suitable for Gulf operation are available.

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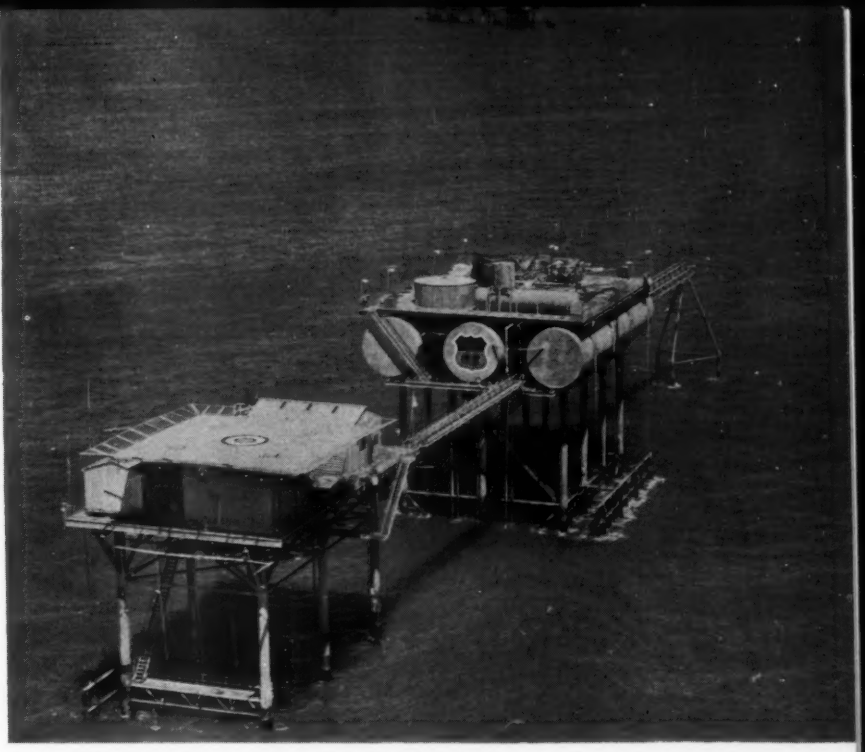


Unique horizontal tanks serve as storage units and as structural members of the separation-storage platform, allowing maximum deck area for production and separation facilities.

Phillips' Engineers describe . . .

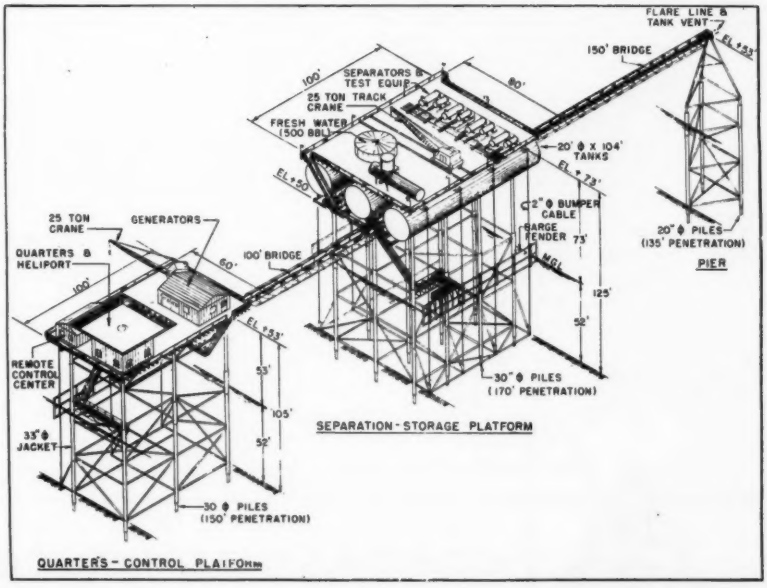
Offshore Production Facilities

By J. F. HENDRICKSON and C. E. YOUNG
Phillips Petroleum Company, Houston, Texas

PHILLIPS Petroleum Company's Eugene Island facilities for operating wells and storing oil in the Gulf of Mexico incorporate a unique design. Horizontal tanks which are used to store the oil also serve as structural members in the combination separator-storage platform. The design enables efficient use of steel and provides maximum deck space for production equipment. The separation-storage unit was outfitted on shore and set in one 510 ton lift.

Facilities are installed in the Gulf of Mexico, Block 129-A, Eugene Island Area, 33 miles from land and 58 miles from Morgan City, Louisiana, the base of operations. The block comprises 3825 acres and the water depth is 53 ft.

(Continued on page 25)



This diagram gives the location of major items of equipment contained on the Eugene Island area production group of Phillips Petroleum Company. Total storage capacity of the separation-storage platform is 17,500 barrels.

This article is excerpted from a paper titled "Phillips Petroleum Company Offshore Production Facilities" presented at the Spring Meeting of the Southern District Division of Production, American Petroleum Institute, held in Houston, Texas, February 26-27-28.

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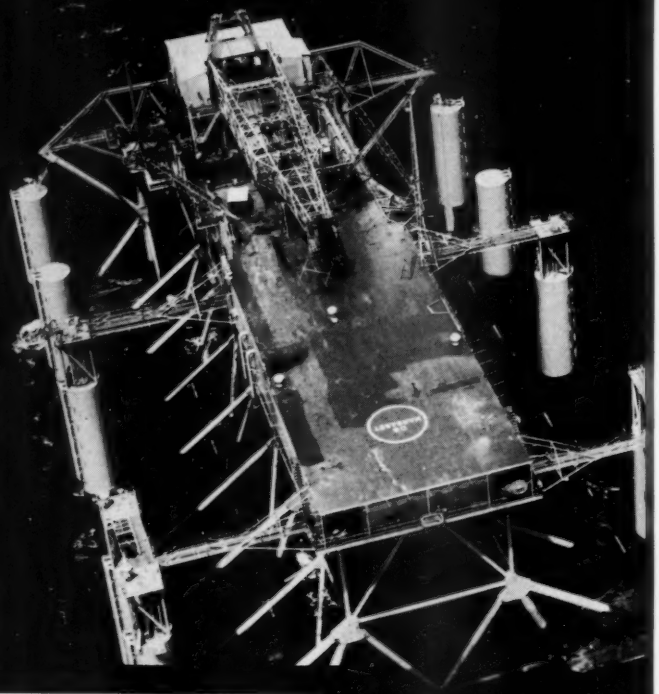

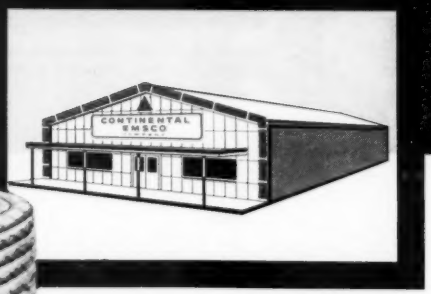

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(Continued from page 23)

Facilities consist of three well platforms, a quarter-control platform, a separation-storage platform and a 150 ft. flare line and pier. Well platforms are connected to the separation-storage platform by 6-in. gathering lines, 3-in. flow test lines, and 1.62 in. power and control electrical cable. Development operations are still in progress .

Platform Design Features . . . The three horizontal tanks 20 ft. in diameter and 104 ft. long serve the dual purpose of storing produced oil as well as acting as primary structural members in the platform itself. The tanks, spaced on 30-ft. centers are each supported on four 30-in. diameter steel-pipe piles. Each tank is divided into three compartments, two of which have a capacity of 2200 bbl. each and one with a capacity of 1450 bbl. Total storage capacity of the three tanks is 17,500 bbl. The tank shell is ⅜-in. steel plate and contains no internal or external stiffening except at the support points. Tanks are connected structurally by transverse trusses at the pile lines to form a single rigid unit.

An 80 ft. by 100 ft. steel deck system is installed across the top of the tanks. This provides maximum area for separation equipment, material-handling equipment, and other equipment required for operating. Two decks, 17 ft. by 104 ft. are also provided at the elevation of the tank bottoms which provide space for pumps, piping, and maintenance. The separation-storage unit is supported on a conventional jacket and piling system, with the bottom elevation of the tanks set at 50 ft. above mean Gulf level.

The unique horizontal tank design required 30 percent less steel per barrel of storage capacity than other designs.

Maximum total dead load plus live load per pile is 300 tons. The structure is designed to withstand a 45-ft. wave accompanied by 125-mph winds while the full live load is imposed. The wave and wind conditions represent the maximum hurricane anticipated. A maximum pile loading of 480 tons would be imposed by a combination of dead load, live load, and loads due to a hurricane. The 30-in. diameter piles were driven to a penetration of 170 ft. to develope an ultimate capacity of 600 tons based entirely on skin friction. Soil conditions were evaluated by test borings and laboratory testing.

Considerable monetary savings was effected by fitting out and rigging up onshore all production equipment on the separation-storage unit. This was made possible by having planned to use the maximum-capacity lifting equipment that was available. Consider the labor involved in piping the separation and test units and oil, gas, and salt-water facilities for a nine-tank battery on land. Double this to take care of installing fresh-water, sea-water, and diesel oil facilities together with tank-gaging and oil-transfer facilities, then add a like amount for the installation of electrical wiring and power-distribution facilities. All of this labor would probably have been doubled and the costs quadrupled if the work had been done offshore rather than onshore. This amounts to 16 times the cost of connecting up a comparable-sized tank battery on land.

The fitted-out and rigged separation-storage unit was transported to location on a barge, picked up and set on its pile foundations in a single lift of approximately 510 tons—one of the largest single lifts ever made in the Gulf of Mexico.

In a similar manner, practically all of the facilities on the quarters-control platform were rigged up, piped, and wired onshore before it was transported to the Gulf for erection. Although there was considerable less piping involved on this unit, there was substantially more electrical-circuit work and wiring. This unit was rigged up first so that it could be erected in the Gulf and serve as a base for completing final connection, tie-in, and hookup work. This materially reduced required derrick barge time.

Conventional "template" or "jacket" type of construction was used on both platforms as well as on the flare pier. This type of structure

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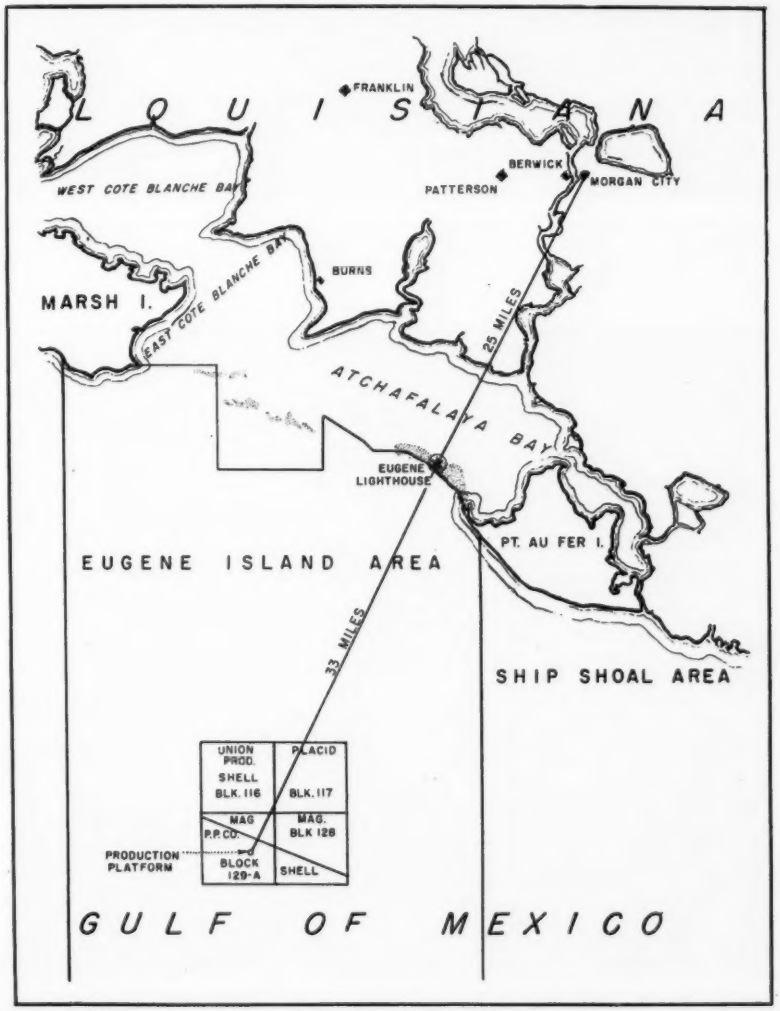
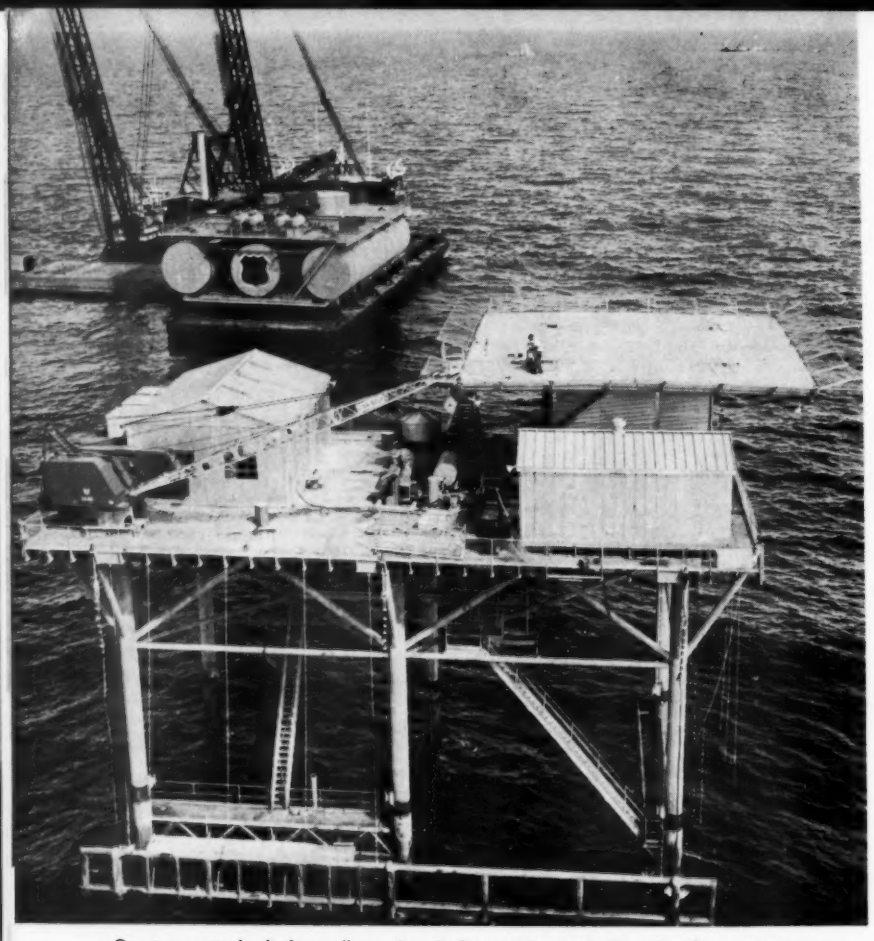
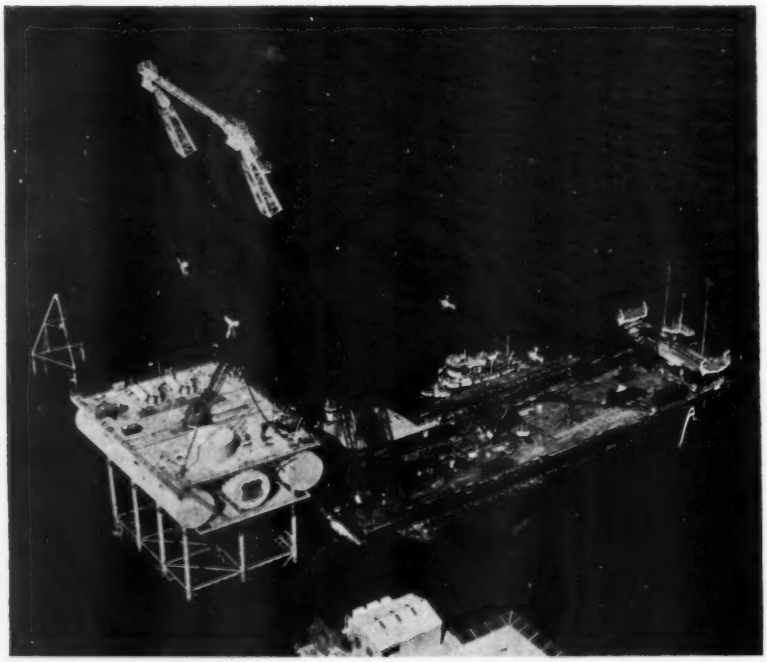


Map of the Eugene Island Area shows location of Phillips' offshore production facilities setting in 53 ft. of water, close to the center of 3825 acre, Block 129-A.



Quarters-control platform, flare pier, jacket section and piles for the separation-storage platform were all installed in the first stage of operations. This gave workers a base of operation and minimized the working time of the large derrick barge.



Specially rigged derrick barge, having two "stiff legs" each with a 400 ton capacity lift, are shown here lifting the completely assembled, 510 ton, separation-storage platform into place.

Offshore Production

(Continued from preceding page)

consists basically of three parts—the jacket of underwater portion through which the piles are driven, the foundation piles which are driven into the ocean floor and extend above the water to form the platform columns, and the deck section which is set on top of the columns.

The jackets for the platforms consist of vertical 33-in. pipes which extend from 8 ft. below the ocean floor to 10 ft. above mean Gulf level. These "legs" one for each pile, are built into a single unit onshore by cross bracing both horizontally and vertically with 12-in. pipe. The jacket serves the dual purpose of a template through which the 30-in. pipe piles are driven and as a permanent part of the structure, serving to provide rigidity and stability against lateral forces.

The field erection of the platform was carried out in two phases to enable use of smaller, less costly derrick barge equipment for the majority of the work. The first phase consisted of completely erecting the quarters-control platform as well as the flare pier and setting the jacket section and driving piles for the separation-storage platform.

Second phase of field erection of the platforms consisted of setting the separation-storage unit on the pile columns along with the 100-ft. and 150-ft. connecting bridges. In order to set the separation-storage unit with all its deck equipment in a single lift, the derrick barge was fitted out with two 240-ft. "stiff legs," each having a 400-ton lifting capacity. As previously stated, the single lift of the fitted-out separation-storage unit totaled 510 tons. Before being placed in service, the tanks were given a final hydraulic test by filling each full of sea water.

After completing the erection of the platforms, the 6⅝-in. and 3½-in. OD connecting test and gathering lines from the well platforms were laid simultaneously with a conventional pipe-laying barge suitable for offshore operations. The electric cable for supplying power and performing remote-control operations was laid separately after the pipelines were installed.

Operational Features . . . Deck units of each platform were fitted out and piped at the shore base. Systems piped which are common to any onshore tank battery are oil, gas, salt water, flare and tank vent.

Not so common to onshore tank batteries, but installed as a part of these offshore facilities are fresh-and sea-water, fire-fighting electrical systems.

A simple fool-proof means of preventing damage to the tanks as a result of excessive internal pressure or vacuum being imposed was built into the tank vent system. This was done by fabricating a "U" tube in the tank vent piping immediately adjacent to the point where the line ties into each tank compartment. The "U" tube filled with water allows a maximum of 1 psi pressure or vacuum to be imposed on the tank. A conventional pressure-vacuum vent line valve is installed and set to operate before the liquid would be discharged from the "U" tubes.

Ground-level-reading tank gaging devices are installed on each tank compartment. These were not installed primarily for convenience, but for reasons of reducing fire hazards. With a means of determining liquid level without opening the compartment for each determination, it was possible to positively seal each compartment with the only access being through a bolted-on man-way. There is no means for gas or oil to escape on the separation-storage platform as a result of an operator negligently opening or closing the wrong valve or "running a tank over."

Electrical power for the operation of the lease facilities is generated on the quarters-control platform. Primary-duty units consist of two natural gas engine powered 125-kw generators and one standby-duty diesel engine powered 150-kw generatory unit. Each unit is interconnected to provide for automatic starting of the "off" generator upon failure of either of the "on" generators. Three-phase power is generated at 480 volts and transmitted to well platforms at 2400 volts. Electric motors are used for operating fresh-water, sea-water, and oil-transfer pumps on the quarters-control and separation-storage platforms and for the wire-line units and foghorns on the well platforms. The diesel generating unit, all foghorns, and all lights are left operating when the platforms are evacuated because of hurricane warnings.

Another feature of the facilities of general interest is the remote-control, supervisory, and telemetering equipment utilized in the producting operations. There are two separate and independent systems for remotely operating valves and motors and for monitoring well conditions on outlying platforms. The two systems are the remote-control system and the telemetering system. The remote-control system is of the pulse-code supervisory type. This was chosen because of its proved reliability and past experience with similar equipment on a large water system operated by our company.

The remote-control center on the quarters-control platform is connected to each of the outlying well platforms by a 1.62-in. OD copper-armored cable. The cable contains three No. 6 stranded wire conductors for transmitting power and three pairs of No. 18 conductors for communications and remote-control functions.

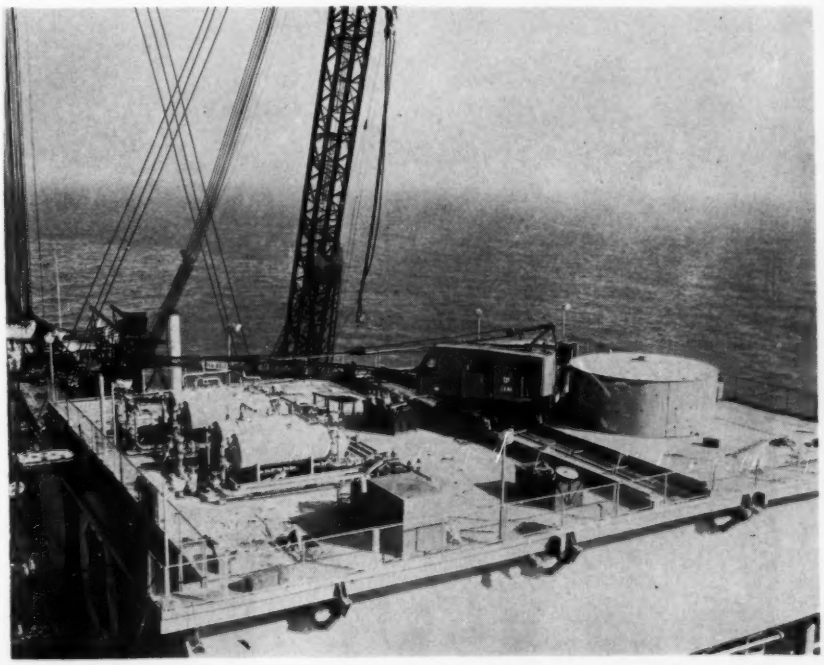
The remote-control center is the point from which the basic switching operations of the wells are carried out. The switching operations remotely performed are:

1. Open up and shut in wells.
2. Switching flow from one choke to another.
3. Switch flow between production and test headers.
4. Start and stop electric motor driven chemical pump.
5. Start and stop electric driven foghorn unit and audibly monitor its operation.
6. Bypass automatic "low line pressure" well shut-in switch.
7. Close all valves simultaneously with one switch.

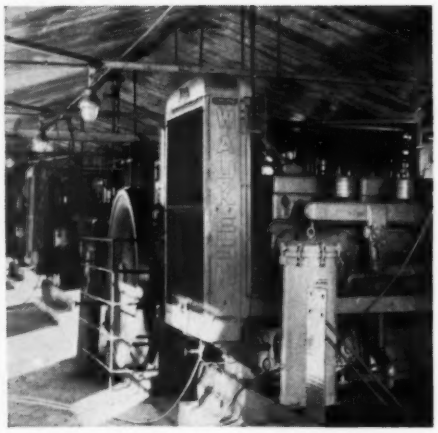
Information on the performance of the wells is obtained at the remote-control center by means of the telemetering system. The information which is obtained on an "on-call" basis is:

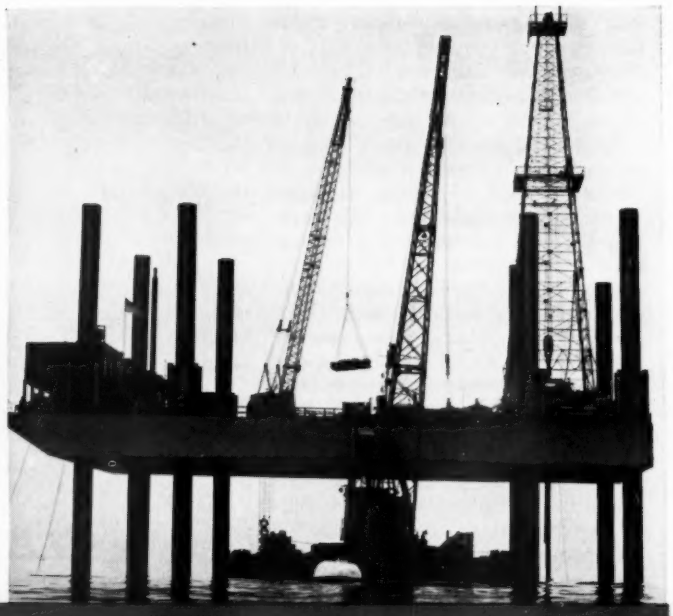
1. Tubing pressure, 0-3,000 psi or 0-10,000 psi.
2. Header pressure, 0-300 psi.

In addition, there is a telephone circuit between platforms which serves as a means of communication for coordinating the activities of personnel engaged in scraping paraffin, repairing equipment, cleaning sand traps, or other activities on the well platforms. Dual chokes are installed in parallel on each well to permit changing chokes without shutting in a well because of sand production and because weather might not permit replacing a cutout choke at the time desired. The remote controlled valves handling full wellhead pressure are of the spring-closing, motor-opening type which close automatically upon power failure. The valves which direct flow between production and test headers are three-way, electric motor driven hydraulic pump type. None of the operations on the separation-storage platform are performed remotely.



Complete 510-ton separation-storage platform was placed intact on twelve, 30 in. piles driven 170 ft. into the Gulf floor. Platform contains separators and test equipment, 17,500 barrels of storage area, a 25-ton Link-Belt Crane and a 500 barrel fresh water storage tank.





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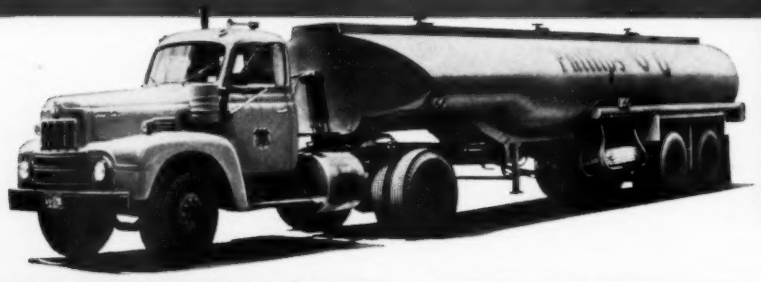

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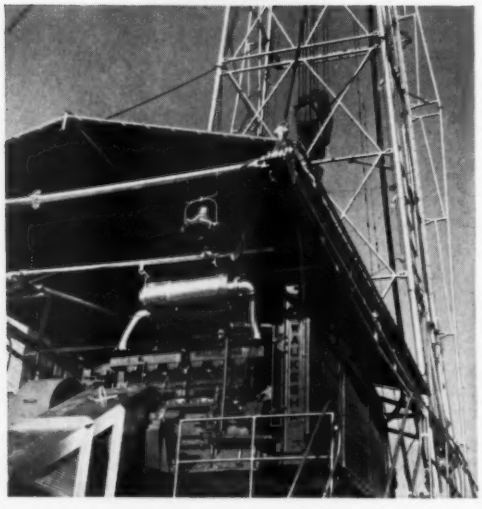
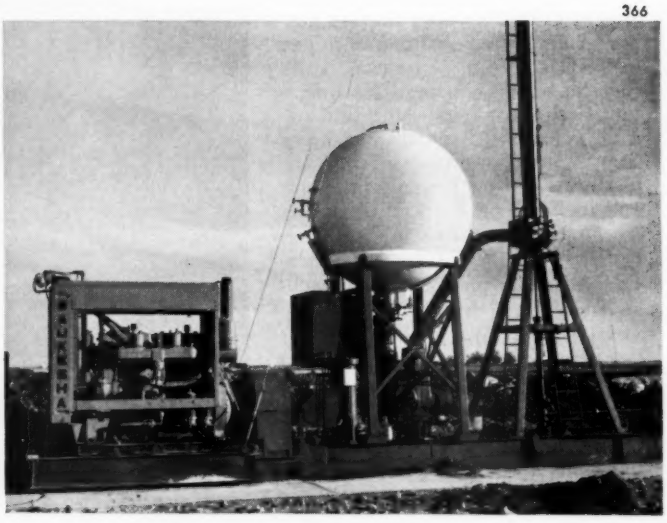




Iran To Hold First Lease Sale On Offshore Rights March 31

Bids on District I, covering a large portion of Iran's Persian Gulf oil rights, will be due March 31.

Prior to the February 1 deadline for qualifying as a bidder, National Iranian Oil Company sent out 35 questionnaires to be used in determining bidder's eligibility. After a bidder is ruled eligible, a specimen agreement form must be purchased for $2000.

Several possibilities have been put forth as likely developments in the bidding picture. Rumors have it that one combine may try to secure the entire offering.

A large bonus offer—at least $50 million—will be included among bids from U. S. oil companies. Another U. S. bid will likely offer NIOC a 50 percent partnership deal minus a bonus.

Still another possibility is an offer for minority participation by NIOC.

California

Underwater TV Facilitates Efficient Drilling In Pacific

Underwater television has been making it possible for Union Oil Company to observe every phase of its drilling operations in the Pacific.

Already the process—closed circuit television—has been used for drilling in waters 600 feet deep. The process eliminates the need for divers, which are useless in water more than 200 feet deep anyway.

Two of the new units, costing about $7500 each, are kept aboard Union Oil's **Cuss I** drilling barge, which is core drilling for a group consisting of Union, Continental Oil Company, Superior Oil Company, and Shell Oil Company. Union Oil has conducted core drilling in water up to 1500 feet deep in the Pacific area.

In operation, the device has a camera which is lowered via a guide line to the ocean floor. Two 375-watt divers bulbs attached to the frame of the camera light up an undersea area 40 feet in diameter.

Connecting the camera to the monitor room on the bow of the barge where the image is viewed on a screen is a 600-foot cable.

Manufacturer for the new unit is Cohu Electronics, Inc., San Diego. However, another firm, Medearis Oil Well Supply Company of Los Angeles, has announced plans for building a model slightly more elaborate.

NLRB Rejects Union's Bid For Marine Crews Election

A petition by the Sailors Union of the Pacific for an election among Richfield Oil Company employes serving in offshore oil explorations in the Pacific has been turned down by the National Labor Relations Board.

The Board ruled that whether drilling is upland or offshore it carries the same label. It had been asserted by the Sailors Union that a difference existed because onshore operations were profit making ventures, whereas offshore work was in the nature of exploration.

The Board declared that although some modifications in equipment might be present in marine operations, such differences do not change the overall function of the work.

Since 1956 the offshore workers over whom the case arose have been represented by the Oil, Chemical, and Atomic Workers International Union. They operate two supply ships and a stationary barge off the California coast.

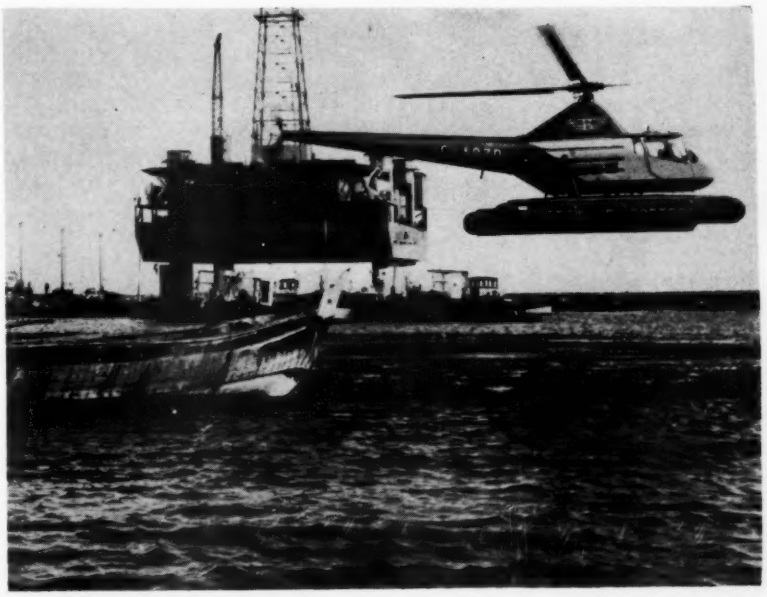
Cuba

Cuban Stanolind Drills Ahead With Two Wildcats Off Cuba

In the coastal waters offshore from Cuba, Cuban Stanolind Oil Co. may soon have results on two wildcats.

Off the coast of south-central

(Continued on page 31)



A Bristow helicopter flies in front of **Adma Enterprise**, Abu Dhabi Marine Area's marine monster, which snuggles next to the Das Island shore line as workers ready it for towing to drill site 20 miles off Das Island.

Final additions to the giant mobile unit include welding of two 16-ft. sections and one 24-ft. section to each of the four 10-ft. diameter legs, making them 161 feet long.

Helicopters used during drilling operations, like the one above, have been fitted with flotation gear, comprising rubber pontoons that consist of six separate air containing sections.

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(*Continued from page 29*)

Cuba, 19 miles from the shoreline of Las Villas Province, the Tortuga Shoals No. 1 was drilling toward the proposed 9000 foot mark.

Spudded last December, it will test the Cretaceous. Operations are being conducted from an artificial island dredged up from the coral reef of Tortuga Shoals.

In the shallow waters of the Gulf of Guacanayabo, Lavanderas No. 1 was being drilled with a rig mounted on a barge submerged on Lavanderas reef.

Located 15 miles due north of the town of Niquero, Oriente province, it is projected as a 7,500 foot test of the Eocene. Test is an offset to acreage involved in a working agreement between Cuban Stanolind and White Eagle International Oil Co.

Both tests are located on concessions held jointly by Cuban Stanolind, Trans-Cuba Oil Co., and Cuban Venezuelan Oil Voting Trust.

To drill the Tortuga Shoals test, Cuban Stanolind transferred a rig from Jamaica where it had racked up only three dry holes in a search for oil there.

Another firm which plans to begin operations in Cuba soon is the recently formed Pan American Land & Oil Royalty Co. According to W. Rufus Brent, co-organizer of the new company and vice president of Producing Properties, Inc. of Dallas, the company holds overriding royalty rights on 19.2 million acres, of which a considerable portion is offshore.

France

Proposed Line From Sahara Would Cross Mediterranean

French officials are considering laying a pipeline beneath the Mediterranean Sea to carry natural gas from the Hassi R'Mel field in the Algerian sector of the Sahara to Southwest France.

Gaz de France, government owned gas company, is studying the proposal, one of the latest possible methods for transporting gas to consumer areas. Location of the field from which the gas would be taken is about 185 miles northwest of the Hassi Messaoud oil field.

The French are also devoting thought to an alternate idea for using the gas to make electricity which could then be carried to areas where needed by underwater lines.

Germany

Oil Explorations Picking Up In Northern And Baltic Seas

German oil firms, making an extensive effort to develop offshore production for the nation, are optimistic.

A company called DEA, operating near Kiel in the Baltic Sea, has reported promising results.

Plans for developing a section of the North Sea around the island of Helgoland in order to make it more attractive to drillers has been announced by the four North German states of Schleswig-Holstein, Hamburg, Bremen, and Lower Saxony.

Drilling will be started soon in the North Sea by the German company Gewerkschaft Elwerath.

Guatemala

Gulf Of Honduras Acreage Acquired By Antonio Molina

In Guatemala where the first wildcat is being drilled, Antonio Molina has acquired drilling rights

(*Continued on next page*)

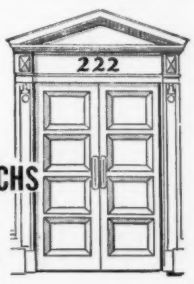
WHEN is a good time to invest in stocks?

With large increases in defense spending scheduled to begin this year, the prudent investor who purchases stocks at current levels—*NOW*—may well be in an enviable position later.

Here are several promising stocks of a regional nature which we suggest you look into now:

Canal Assets, Inc.
Fifteen Oil Co.
Southdown Sugars, Inc.
South Shore Oil & Development Co.

Additional information about these as well as any other stocks is yours for the asking. Just call or write Dept. F.



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(Continued from preceding page)

on 12,000 acres in the Gulf of Honduras.

At an inland location 27 miles from Puerto Barrios, Coastal Plains Oil Company is conducting a projected 5,500-foot test well. Site of the No. 1 Carlos Castillo Armas is on a 48,000-acre lease which Coastal Plains obtained through a merger with Sloane Exploration Company.

Geologists from thirty-nine oil companies are searching for oil on Guatemala, and about $15 million is ticketed for exploration activities during 1958.

Honduras

Barnwell's Mister Cap Eyes 51 Million Acre Concession

Mister Cap, Barnwell Offshore, Inc.'s self-elevating mobile unit, might be towed 1000 miles to Honduras to explore for oil this summer.

R. S. Barnwell, Jr., president of the company believes that towing the rig to Honduras to drill offshore would be less expensive than transporting a land rig all the way to an inland location.

The 51-million-acre concession, which Barnwell holds jointly with Cia. Petrolera Hondurena, includes both land and marine acreage. Mister Cap, which can drill in water up to 100 feet deep, was completed in 1957 by LeTourneau, Inc., at its Vicksburg, Mississippi, marine ways.

Kuwait

Indiana Standard Joins Hunt In Bidding For Kuwait Rights

In the torrid battle for Kuwait's share of the Persian Gulf oil rights, Indiana Standard has joined forces with H. L. Hunt.

A 50-50 deal with a $112 million bonus was purported to be the partner's latest bid. Earlier, the Hunt interests supposedly made an offer approaching a 60-40 basis, but it was not known if Indiana Standard would go along with the deal.

Shell Oil Company offered bonuses as high as $85 million, and a group of seven or eight U. S. oil companies presented the Kuwait government with a deal similar to that signed by the Saudis and the Japanese. The Japanese seemed to be getting little or nowhere in their effort to secure Kuwait's oil rights with the same agreement used in the Saudi deal.

Indiana moved into the spotlight twice with formation of a subsidiary to carry out oil operations in the Eastern Hemisphere.

The wholly owned new branch headed by C. F. Dohm has been named Pan American International Oil Company. It is a subsidiary of Pan American Petroleum Corporation, producing subsidiary for Indiana Standard.

Louisiana

Four Offshore Workers Die In Gulf Helicopter Accident

Four offshore oil workers lost their lives off Grand Isle last month when the helicopter in which they were riding suddenly went "beserk" and dipped into the Gulf of Mexico.

Quick thinking on the part of the pilot was contributed with saving the lives of seven other occupants of the craft. E. E. Eskridge, pilot for Rotor Aids, Inc. of Ventura, Calif., who resided in a camp at Grand Isle, managed to get his helicopter clear of a nearby rig and set it down with the door up to permit the riders to slip out into the rough

(Continued on page 34)

PLANNING AN OFFSHORE OPERATION?

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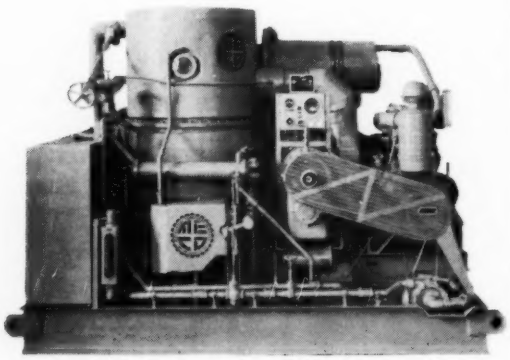

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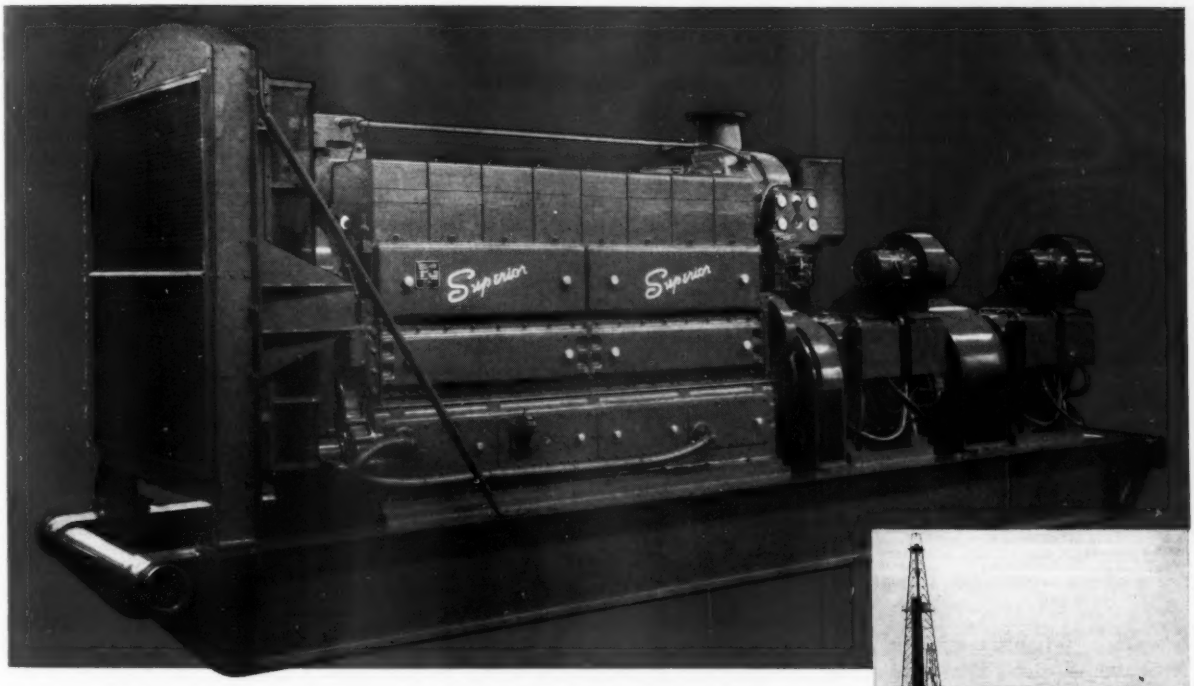

Lighter, extremely simple, more powerful drilling rig power plant!

Creole Petroleum Corporation, a Venezuela affiliate of Standard Oil Company (New Jersey) chose White's Superior Diesel-Electric power for drilling operations on Lake Maracaibo in western Venezuela. The complete power package, including three 900 HP Superior engine-generator sets mounted on the 180′ long by 70′ wide barge, will dependably provide a total of 2700 HP. From simplified controls, the driller can direct 2,000 HP to the platform draw works or 2,300 HP to the mud pumps. White's diesel power concentration achieves simplicity, compactness and light weight. The favorable power to space ratio obtained through electric motors behind the draw works means Creole Petroleum can use a standard size platform and yet have ample power for deep drilling.

Creole's barge power components consist of 3 engine-generator sets, 5 drive motors, and simple controls. White's well known Superior oil field engine and rugged 400 KW generators in tandem make up an engine-generator set. Large drive motors are rated 625 HP continuous and 1000 HP intermittently. Greatly simplified controls allow application of power where required, either to draw works, mud pumps, or to both when pumps and rotary are operating.

White's range of other diesel-electric drilling power packages combines the Superior oil field engine and rugged 300 to 550 KW generators. Largest drive motors are rated 1000 HP continuous and 1250 HP intermittently. All components are stocked, standard production items, ready for prompt delivery.

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(Continued from page 32)

Gulf waters. Eskridge lost his life.

Other dead are Frank V. Bergeron of Cut Off, La., and J. A. Ledet of LaRose, La., employes of Rowan Drilling Company, and Humble Oil & Refining Company geologist B. F. Wiley of Grand Isle, La.

Shortly after taking off from an offshore platform in Block 16 Field nine miles off Grand Isle, the 14-place helicopter went into a spin. It continued its crazy antics until it struck the water. Survivors and dead were picked up by an Humble Oil & Refining Company tugboat two hours later. One of the survivors suffered burns from high octane gas, but the others were released after being treated in hospitals in Golden Meadow and Raceland, La.

Investigations were being conducted by the Coast Guard, C.A.B., and other authorities, but at last report cause of the accident had not been determined.

Mineral Board Begins 1958 With $7 Million Lease Sale

The State's first lease sale of 1958 has added more than $7 million to the Louisiana treasury.

Going to the highest bidder at the State Mineral Boards bimonthly lease meeting were 43,926 acres including bay and water bottom tracts such as the East Cote Blanche Bay area of St. Mary and Iberia Parishes.

Top bid came from Magnolia Petroleum Company—$1,872,777 for 3975 acres in East Cote Blanche Bay. The Board turned down all bids on submerged lands in Lake Charles to avoid a battle with state legislators and citizens of the city of Lake Charles.

Later these tracts will be readvertised, but the leasee will be compelled to employ directional drilling in line with a beautification plan which has been established for the lake.

CATC Group Will Construct 175-Mile Microwave System

Plans for a mammoth 175-mile microwave system connecting onshore stations with offshore rigs have been announced by the CATC Group.

Construction on the facility, which will connect seven offshore platforms with onshore installations, is to be underway immediately. The Group plans to have it ready for use late this year. It will be able to claim distinction for having the longest microwave system in operation in the Gulf of Mexico.

Electronic equipment for the system will be built by Motorola Communications and Electronics, Inc., while onshore microwave buildings and towers will be constructed by John D. Trilsch, Inc. of Houston.

Mexico

CIMA Orders $3 Million Rig To Explore Mexican Waters

A U. S.-Belgian organization has ordered a $3 million drilling barge and rig from Ocean Drilling & Exploration Company of New Orleans preparatory to exploring for oil off the coast of Mexico.

Known as CIMA, the group has obtained special contracts with Petroleos Mexicanos, government oil agency to drill on a 60-mile stretch of submerged lands off the coasts of Veracruz and Tabasco, Mexican states.

CIMA consists of three firms, American Independent Oil Company, Edwin W. Pauley, and a Petrofina of Belgium affiliate, Mexofina, S. A.

Back in 1949, the organization carried out seismograph work off the Isthmus of Tehuantepec. Using directional drilling along the shore of Tabasco, it obtained minor oil shows in 1949-50.

Sharmex, S. A., which has been conducting tests offshore from Mexico in the Tamiahua lagoon south of Tampico, has no commercial shows to date. Sharmex is an affiliate of Sharples Oil Company of Denver.

Oklahoma

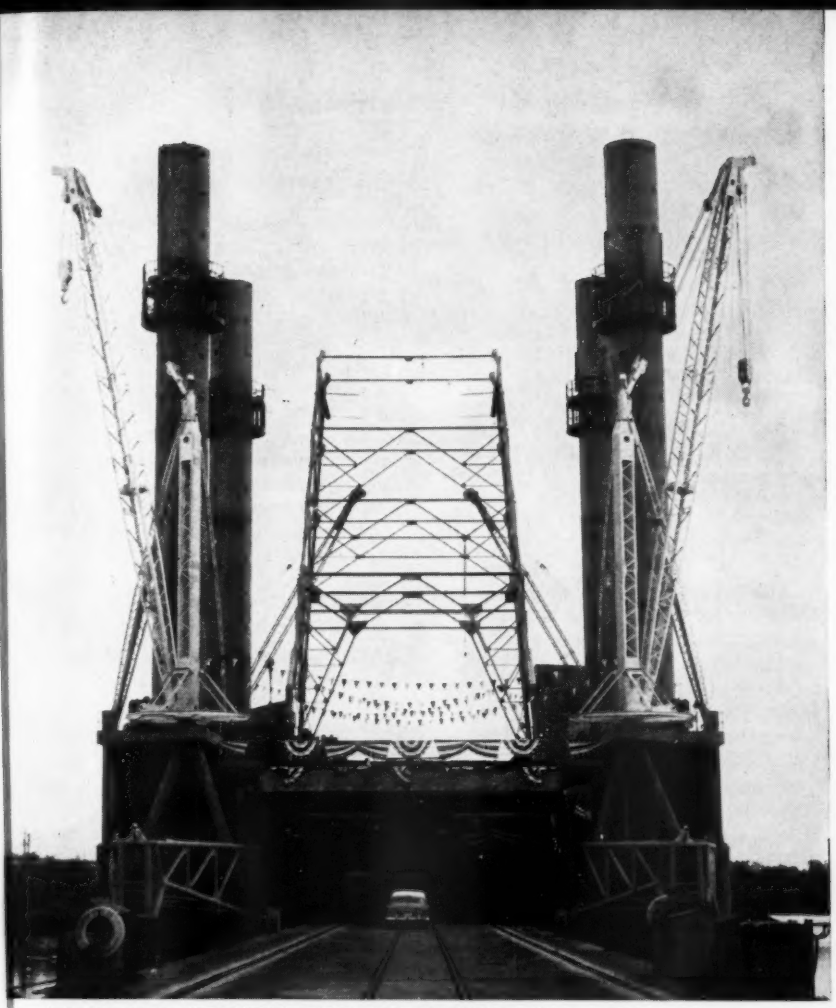
Gulf Oil Corporation Draws $305,000 Fine In Oklahoma

Oklahoma's State Corporation Commission has levied a $305,000 fine against Gulf Oil Corporation after the company rejected an order to take all its allowable crude oil production.

Gulf will contest the fine, however, according to R. B. McDermott, the firm's attorney, carrying the case all the way to the United States Supreme Court if necessary. The company was fined for 61 violations, one for each day stretching over a two-month period. Each fine was $5000.

It marks the first opportunity for

(Continued on page 36)



A PAIR OF AMERICAN STIFFLEG DERRICKS will give this nearly completed platform the fast, powerful, dependable lifting equipment that's essential when moving extremely heavy drilling equipment on the rig. American's carefully constructed booms have the long reach *plus capacity* that offshore operations demand.

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VERSATILE AMERICAN CRANES like the 700 Series Crawler (foreground) give shipyards highly mobile lifting power. Specially engineered deck-mounted American Marine Cranes (atop platform) provide fast, safe booming and precise load control. Capacities from 12½ tons.

AMERICAN DERRICKS SELECTED TO HANDLE RIG'S DRILLING MACHINERY

In the offshore drilling industry, equipment gets its roughest treatment, yet must be "on call" 24 hours a day—every day—ready to work without fail! Platform operators have found that American Stiffleg Derricks fulfill their demands for dependable equipment capable of lifting and moving extremely heavy drilling machinery right on the rig!

More than 60 years of design and engineering experience—well over half a century of on-the-job performance in construction and industrial applications has proved the superior quality of this broad line of stifflegs. Teamed with powerful American Hoists, these versatile derricks offer capacities from 2½ to 800 tons and meet every load handling challenge—on platforms, barges and tenders.

American offshore engineering specialists will help you select the proper stiffleg and hoist combination, or the American Marine Crane best suited for your operation. Contact your nearest American Distributor or write directly to:

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FORT WORTH, TEXAS

(Continued from page 34)

the agency to try its authority to compel an oil company to take a specified amount of crude.

Previously the Supreme Court turned down a request by Gulf to block the State agency's order, but the Court said it would wait until Oklahoma settled the affair.

Paraguay

Rig To Be Towed From U. S. To Drill On Paraguay Lease

Rimrock Tidelands, Inc. has announced plans for towing one of its rigs now operating in the Gulf of Mexico off Louisiana to Paraguay.

The company has completed its third major expansion in recent months following signing of an agreement with International Products Company, Paraguay's largest industrial firm, by which the companies will share equally in exploring a concession.

Transported almost the entire distance by water, the rig will be floated up the Parana and Paraguay Rivers about 1000 miles to the embarkation point for the drilling site.

In another recent foreign negotiation, Rimrock purchased the Mofag Oil Exploration Company, Inc., a Swiss Corporation which holds oil concessions in Switzerland and France, including considerable offshore acreage.

Texas

Tidelands Battle Waxes Hot As Texas Adds A Sidelight

In the face of the present long drawn out tidelands battle, another sideline contest seems in the offing.

Texas has asked the Supreme Court to reverse a ruling of the State Supreme Court granting Gulf Coast cities the right to annex tidelands.

In 1954 the City Council of Texas City passed an ordinance whereby it annexed 3500 acres including 2011 of tidelands adjacent to the city.

Part of the underwater oil lands had been leased from the State for oil exploration. Chief operator involved in the area is Pan American Production with 18 wells.

In the State-Federal tidelands suit, Texas has filed a motion that its case be heard separately from that of the other States involved.

Venezuela

Venezuelan Revolt Affects Oil Operators But Slightly

Oil operators in Venezuela have been assured by the new government junta that the present system of oil production will remain unchanged.

Only slight damage resulted to the oil industry from recent political uprisings in the Latin American nation; however, some Venezuelan business men and politicians have expressed resentment at U. S. oil import restrictions since the Perez Jimenez suppression was lifted.

Throughout the revolution, oil never became a political issue, and workers in Caracas, scene of the bloodiest fighting, were allowed to go about their business unmolested.

A general strike at Shell's Condon facility and Creole's Amuay refinery temporarily cut production before supervisory staffs took over and established normal quotas again.

Washington

Bill Sought To Give Schools Federal Tidelands Revenue

A bill to allocate all moneys received by the government from leases of offshore oil lands to education is being promoted in Congress by Rep. Torbert H. MacDonald of Massachusetts.

Rep. MacDonald's proposal originated even in the face of the hotly-disputed tidelands battle in which several states are endeavoring to retain ownership rights beyond the three-mile limit advocated by the federal government.

Under Rep. MacDonald's bill, revenue would be derived from lease payments, royalties and other benefits on lands on the continental shelf beyond the three-mile limit granted states by the United States.

He estimates that $6 billion might eventually be derived by the government from oil operations within the offshore areas.

Secretary of the Interior Fred A. Seaton has released figures indicating funds that would accrue to the schools hereby represent no imposing figure after all.

During 1957, the government received just $2,208,700 in oil and gas royalties from the tidelands.

Lease sales of submerged lands during 1954 and 1955 have been the big revenue gatherers, bringing in some $250 million.

Welex YELLOW Has Gone to Sea

In the area which had been set aside for sea gulls and ships and sharks, the tremendous offshore drilling platforms have become a recognized partner. Now, the Welex offshore units have added their yellow brilliance to this picture. Here, oil men have tapped resources that are thousands of feet underneath a land that is covered by hundreds of feet of water. To aid these sea-going oil men, Welex offshore units offer the same top flight services that have earned the confidence of operators and producers on land for many years. From these bright yellow offshore units, perforating, resistivity and radioactivity logging and other special wireline services of unexcelled quality are all in a day's work. Only with Welex on the job can operators be assured of having available *every* needed logging and perforating service. On land or offshore, Welex offers the most complete industry-accepted wireline services whenever and wherever they are needed.

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INDUSTRY ITEMS . . . . . In the News

Chaffin

Williams

Loffland Brothers Names New Gulf Coast Personnel

Loffland Brothers Company has named a new general superintendent and assistant general superintendent of their Louisiana-South Texas division, John O. Rundle, vice president of the Tulsa, Oklahoma firm announced.

Kenneth E. Chaffin succeeds George C. Mallory, deceased, as general superintendent, and D. E. Williams has been promoted to assistant general superintendent.

Chaffin has been head of offshore operations for Loffland Brothers for the past three years and has a total of 25 years drilling experience.

Williams, who was made superintendent of land and inland barge operations in the Louisiana-South Texas Division in July, 1956, has had extensive experience in both marine and land operations.

He was born in Frost, Texas, and began his career in the oil well drilling industry in 1941 when he joined the Loffland Brothers organization.

Geophysics Society Names New Assistant Editor

New editorial assistant for the Society of Exploration Geophysicists is Hansford Lee Farris, Jr., Dr. Norman Ricker, retiring SEG editor, has announced.

Farris will occupy a new position, which Dr. Ricker says, was created to relieve the society's elected editors of mechanical duties in the publication of GEOPHYSICS and to assist the business manager in editing non-technical departments of the official journal.

Prior to his appointment, Farris was mathematician for the Nuclear division of Black, Sivalls, and Bryson, Inc.

API Meeting Rescheduled To Tie In With Oil Congress

The midyear meeting of the Division of Refining of the American Petroleum Institute has been rescheduled to tie-in with the Fifth World Petroleum Congress.

Both meetings will be held in New York, May 27-29.

The API meeting would normally be held in the middle of May, and anticipated attendance would be around 2000 persons. The congress will be host in 1959 to about 5000 oil scientists and technologists from all over the world, and invitations are being extended to these men to attend the API Refining meeting also.

Twelve to fifteen technical sessions will be held during the API meeting for oil men from as many as 45 countries.

Petroleum Exposition Office Opens 6 Months In Advance

Opening of the office of the International Petroleum Exposition in Tulsa for the 1959 show has taken place six months earlier than for any previous show, announced Wm. B. Way, general manager.

Officials have predicted that the exposition which is set for May 14-23, 1959, will be the largest in history.

With over 70 per cent of past exhibitors having already signed up, officials are now looking for additional space.

Applications are also being made for housing accommodations, reports Anthony F. Keating, chairman of the Housing Bureau. Most motel and hotel facilities will be allocated through this bureau which opened an office February 1 to handle accommodations for the 25,000 to 30,000 expected visitors.

Applications may be made to George Billingsley, manager, at the Oil Capital Building, 507 S. Main, Tulsa.

Roster of Officers Announced By National Petroleum Group

Highlighting selection of officers at the 55th annual meeting of the National Petroleum Association in Atlantic City was the reelection of Guy B. Hunter to president.

For Hunter, chairman of the board of Quaker State Oil Refining Corporation, this marks the third term as head of the oil refiners association.

Other officers include Paul R. Beck of Pennsylvania Refining Company, first vice president, and Rexford S. Blazer of Ashland Oil & Refining Company, second vice president.

California Company Names Gosline To Three-Way Job

In a three-fold promotion James E. Gosline has been named director, vice president and assistant to the president of the California Company.

Gosline

He succeeds E. M. Kipp who has been transferred to the executive staff of Standard Oil Company of California in San Francisco.

Gosline joined Standard of California in 1933 as an engineer after a term as instructor in mechanical engineering on the faculty of the University of California.

Since last October, he had served as special consultant on production for Standard of California in San Francisco. Prior to that he was general manager of the firm's producing department.

More Than 600 Oilmen See First Oil Forum at Houston

First Houston Oil Forum, attended by more than 600 Houston area oilmen, may have set a precedent that will lead to a series of such meetings in which governmental officials from all parts of the nation will participate.

At the non-political forum, officers of five oil industry associations outlined important problems confronting the industry to United States Senator from Texas Ralph Yarborough.

Each speaker was granted five minutes for outlining a particular problem, and the Senator had an opportunity to comment after each talk.

Spokesmen and their topics were W. J. Goldston, district vice president of the Texas Mid-Continent Oil & Gas Association, "Percentage

(Continued on next page)

(Continued from preceding page)

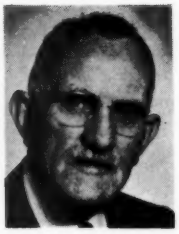
Depletion Provision;" Raymond D. Reynolds, vice president of the Texas Independent Producers & Royalty Owners Association, "Imports;" Curtis Hamkamer, vice president of the Independent Petroleum Association of America, "Harris-O'Hara Natural Gas Bill;" Lloyd F. Thanhouser, American Petroleum Institute, "Senate Bill S-11 and Other Legislation;" and J. U. Teague, president of the American Association of Oilwell Drilling Contractors, "Plight of the Small Man in the Oil Industry."

Atlantic Refining Elects Bradshaw As Vice-President

Thornton F. Bradshaw has been elected vice-president of Atlantic Refining Company and named general manager of a newly created department of finance and accounting.

Bradshaw, a graduate of the Harvard School of Business Administration, joined Atlantic in June, 1956, as assistant general manager of accounting and analytical services. Formerly he was a partner of the management consulting firm of Cresap, McCormick, and Paget.

Martin



Vorenkamp

Shell Transport And Supply Department Gets New Office

The new transport and materials department of Shell Oil Company is now located in the Maryland Casualty Building across Common Street from the Shell Building, B. Dykstra, vice-president announced.

Shell's continual growth and expansion in New Orleans has made it necessary to secure temporary office space in several locations.

The new transport and materials department, headed by K. W. Martin, performs four formerly separate functions. Included in the department are purchasing and stores, transportation, oil shipping and the crude oil office.

Several staff appointments have been made in the new department. E. R. Vorenkamp was named special assistant to the transport and materials manager. L. E. Slagle succeeded Vorenkamp as transport manager. He was formerly a senior mechanical engineer in the production department.

In order to keep pace with the company's expanding exploration and production activities in the New Orleans area, the purchasing and stores department has been enlarged, Dykstra said. L. E. Orr has been named manager of the department, A. J. Clark has been appointed purchasing manager, and H. R. Burkhardt, a senior mechanical engineer from the New York office is now stores manager.

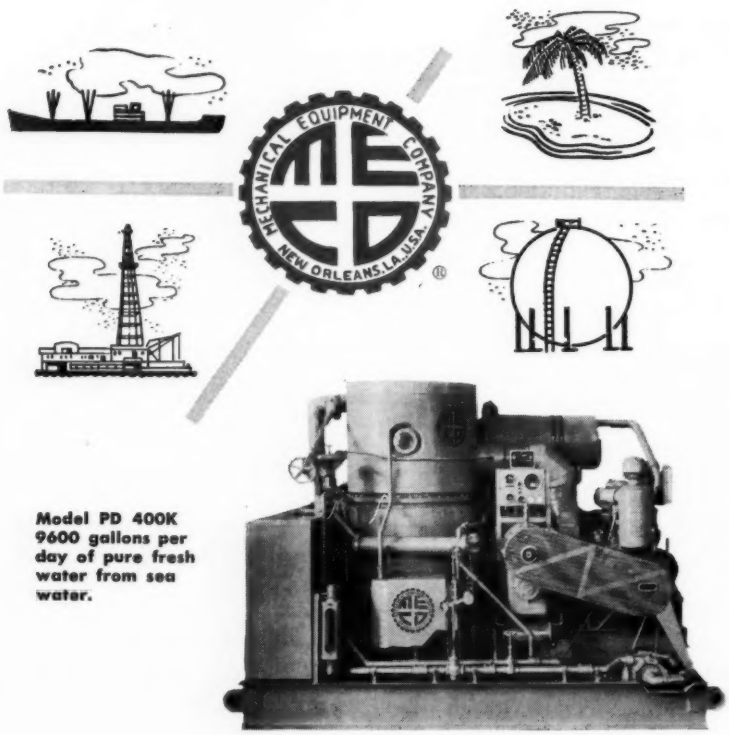
H. F. Winham continues as oil shipping division manager and T. B. Medders as crude oil representative.

Geologist's Society To Hold Annual Convention in March

The American Association of Petroleum Geologists will hold its forty-third annual convention in Los Angeles March 10-13.

Headquarters for the convention will be the Biltmore Hotel. It is held jointly with the Society of Economic Paleontologists and Mineralogists.

dependable performance . . .



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MAGIC lays lines for . . .

TGT Undersea Extension

Addition to West Delta area gathering system extends 18 miles into the Gulf to tap Blocks 54, 58, and 59

Major extensions to existing gas gathering systems in deep waters in the Gulf of Mexico are on the winter agenda for marine pipeliners.

A project scheduled for completion soon is the addition of ten miles of underwater lines to an offshore gathering system in the West Delta area. Sponsor for the project is Tennessee Gas Transmission Company.

The 12¾-inch concrete coated line will be laid in waters 55 feet deep and will be buried in trenches six to ten feet beneath the sea bottom. It will extend into the Gulf about 18 miles, feeding into an existing line which runs seaward from the shore.

When the new addition is complete, TGT will be able to take gas from Blocks 54, 58 and 59, all of which were previously isolated from the gathering system. All three fields were developed by the CATC group.

Construction of the new link is being carried out by Marine Gathering Company's Magic, first pipelaying barge especially designed for laying underwater lines in the Gulf of Mexico.

Magic, which was built by Marine Fabricating and Engineering Company of Houston, made big pipeline news last fall when it laid the world's deepest submerged oil pipeline for the CATC group. That 25-mile network serves three self-contained platforms in the Grand Isle Block 47 Field.

Maximum capacity of the 12-inch line buried three feet beneath the Gulf bottom is 45,000 barrels of oil per day, or 46 million cubic feet of gas per day.

Before completion of the project, such knotty problems had to be met as unusual currents and anchoring difficulties in the silt along the Gulf floor. Hurricanes Audrey and Bertha, forced cessation of operations for a time, but the barge is equipped for 24-hour operation and the line was completed as scheduled.

A unique method of operation is utilized by the **Magic** as she pulls herself forward in 40-foot steps like the legendary "forty-league boots." This phase of operation is accomplished by taking in lines on her forward anchors and letting out the aft anchor lines.

On the Grand Isle operation, however, peculiar currents created by the Mississippi River caused the eight 4000-lb. Danforth anchors to shift constantly. After other modifications failed, the problem was solved by taking in line so as to maintain tension, thus keeping the barge positioned as joints of pipe were being laid.

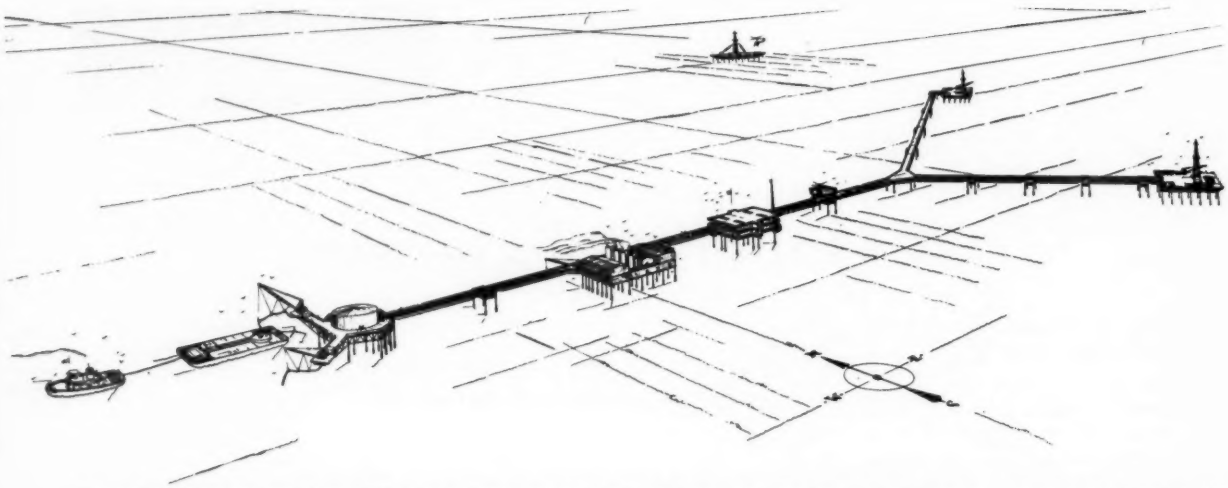
In design, the all-steel lay barge measures 260-ft. x 50-ft. x 13-ft. and is ballasted to such a degree as to draw only four feet of water if necessary. Its specifications were drawn to standards of the American Bureau of Shipping by Robert C. Ledford, operating vice president of Marine Gathering Company, a wholly-owned subsidiary of Commonwealth Oil Company.

Another submarine pipeline project is known as the Mecom - San Jacinto lateral proposed by Transcontinental Gas Pipeline Co. of Houston.

Plans call for laying a 16-inch line out to Blocks 39 and 40, starting in Block 110, 18 miles southeast of Cameron, La. Striking the mainland at a point near Cameron, the lateral will follow the coast to feed into a line which was recently constructed out to Block 45.

It will also stretch into the Texas section of the Gulf, where it will gather gas from wells in Block 10.

Marine Gathering Company's MAGIC, the first barge ever designed specifically for pipelaying is now on its second job, laying a 12¾-in. gas line in 55 ft. waters in the West Delta Area.



Series of platforms will stretch out in Y shape, oriented east and west, off Grand Isle, Louisiana. They will have to be some of the largest in the Gulf to support the extremely heavy equipment used in Frasch process sulphur mining. Platforms will also provide space for offices and quarters.

Offshore Sulphur Mining

Freeport Gulf Sulphur begins construction of first offshore sulphur mine to produce from huge deposit discovered by Humble Oil & Refining Company.

GULF breezes wafted about the platform and seagulls circled as the routine coring job began. Casing went down, down, into the hole—turning, cutting, grinding—as it penetrated to deeper strata. Then came the return trip and the derrick man aloft racked the long strings of pipe as they came out.

As soon as the husky Humble driller unscrewed the four-foot core column, the waiting geologist broke it open with his hammer. He picked up a piece of chalky gray limestone and held it up to the afternoon sun. Yellow flecks and streaks gleamed in the afternoon sunlight, and the geologist identified them with subdued enthusiasm—sulphur!

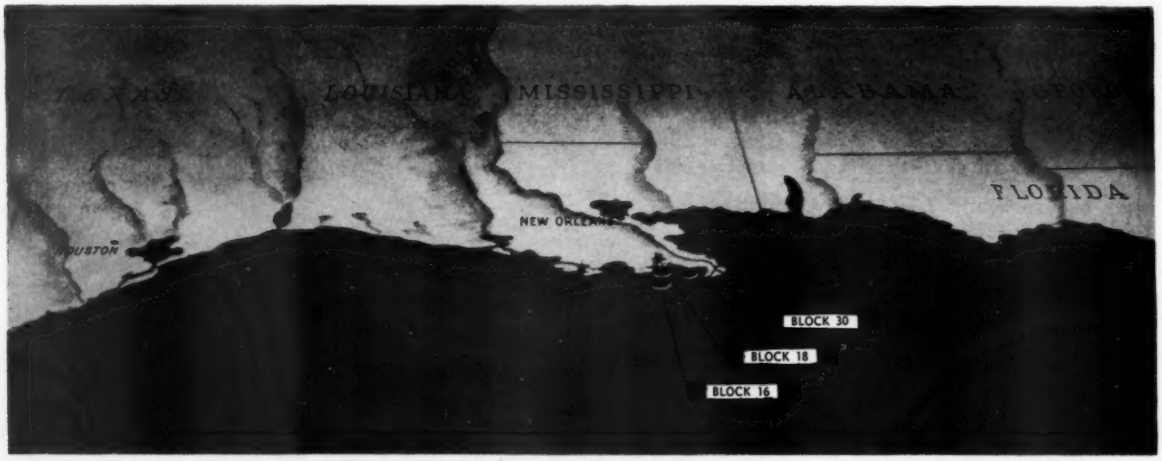
Subsequent discoveries showed that the find of sulphur by Humble Oil & Refining Company should rank as one of the world's top five sulphur discoveries.

Several hundred acres of sulphur . . . The Brimstone belt seemed to cover several hundred acres. Block 18 proved to be the biggest find—three times larger than Block 16, the original discovery. A cap rock at Block 30 showed signs of sulphur there, also.

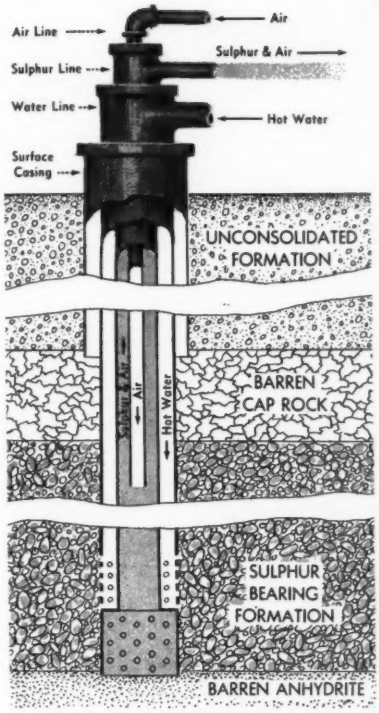
It is the first major discovery of sulphur on the continental shelf. The mineral that is at home just about anywhere has now been found under the ocean floor. Seven leases on the finds were obtained from the U. S. Department of the Interior.

Agreement with Freeport Sulphur company . . .

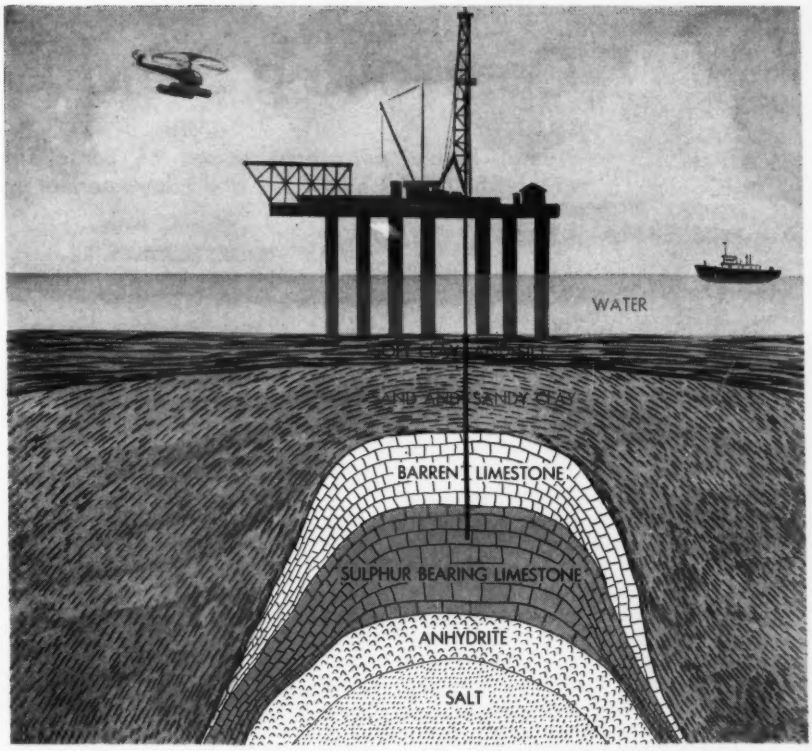
After carefully considering problems which may be encountered and costs of producing and marketing



Three ovals mark salt domes where Humble discovered world's first offshore sulphur deposits. Big find was six miles from land at Grand Isle Block 18, the original discovery Block 16 is nearby, and West Delta Block 30 is 12 miles east.



Frasch sulphur mining process uses hot water to melt sulphur and air to force it to surface.



Cutaway of offshore Block 18 salt dome shows rig drilling through hard limestone cap into sulphur-bearing limestone. Sulphur occurs in this block at a depth of 1700 feet.

the sulphur, Humble officers decided on an agreement with Freeport Sulphur Company. The veteran sulphur producer, with experience in mining sulphur in marshland and partially submerged locations, has contracted for the first quarter of the offshore sulphur production system.

Thirteen steel platforms . . . The first phase of the offshore sulphur facilities will be constructed by J. Ray McDermott & Co. of Houston and New Orleans. Surface facilities for the Frasch sulphur mining process, offices, and living quarters will rest on 13 platforms supported by steel pilings. They will rise a minimum of 55 feet above the water and will be connected by 200 foot bridge spans. There will probably be changes in plans for the structures as the project develops, but at present the system is designed to form a "Y" oriented east and west off Grand Isle, Louisiana.

Financing . . . To aid in the financing of its various expansion projects, Freeport has arranged with a group of banks for $25,000,000 credit.

Sulphur production . . . The mine is scheduled to go into production in 1960, and sulphur produced from the deposit will be transported in molten form by insulated barge to the company's storage point at Port Sulphur, 33 miles away. From there shipments will be made by ship, barge, or rail car.

Using seawater with Frasch process mining . . . An essential feature of the new mine will be the process developed by Freeport for the use of seawater for mining. The Frasch process normally requires a large supply of fresh water, but the company perfected the technique of using seawater at its Bay St. Elaine mine near Houma, Louisiana.

The process requires a heating plant of great size and weight. Millions of gallons of sea water superheated to about 320 degrees F. are forced through wells into the cap rock containing the deposit. The sulphur, which has a low melting point, turns to liquid and forms a pool at the bottom of the well. Compressed air pumped into the pool forces pure molten sulphur to the surface where it is pumped through steam-heated lines to storage vats.

Operating personnel . . . The operation at Grand Isle will furnish employment for about 200 workers who will have a schedule of five days on and five days off.

Langbourne M. Williams, president of Freeport, and Hines H. Baker, Humble president who has since retired, signed the agreement to allow Freeport to mine the sulphur.

Controlling Sand Offshore

Strong, highly permeable screen of consolidated, plastic-coated walnut shell holds back sand and allows normal production from well

by W. D. SALLEE
District Sales Manager, Dowell Incorporated, New Orleans

ABOUT one-third of Gulf Coast offshore wells are completed in incompetent sand formations. The resulting sand production is a serious and often expensive problem.

Many operators now overcome this difficulty by using a strong, highly permeable screen of consolidated, plastic-coated walnut shell, which holds back sand while allowing normal production of well fluids. This service, known as Sandlock, is a patented process consisting of pumping an oil slurry containing individual particles of walnut shell, coated with liquid plastic, into a well under high pressure. The plastic hardens, bonding the particles of walnut shell together to form the sand-impervious network.

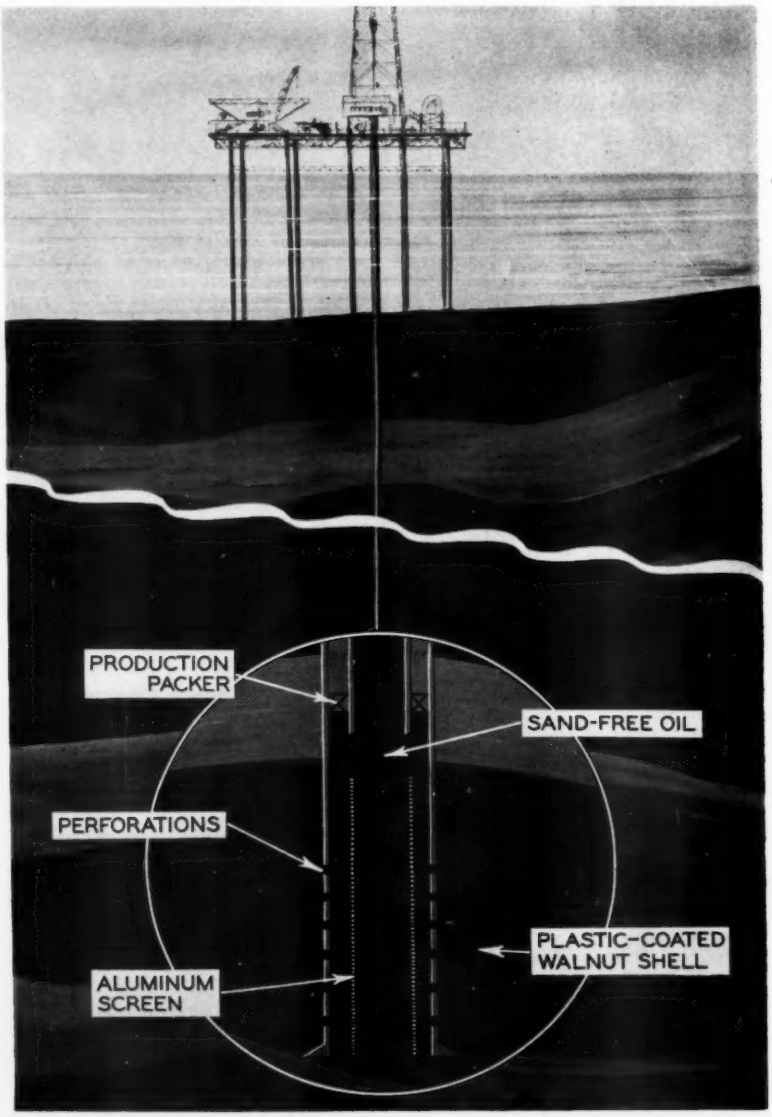
Application techniques . . . ground and graded walnut shell is mixed, at the well site, with liquid plastic containing a catalyst to control setting time. Plastic-coated shell is then added to diesel oil, which acts as a carrying fluid. Because the porous shell partially absorbs the liquid plastic, a firm bond results when the plastic sets.

Treatments may consist of several stages. The amount of walnut shell used in each stage and the number of stages required varies from well to well. Enough shell must be used to protect each perforation, for a single open perforation would allow sand to flow into the well bore.

Frequently the shell network is allowed to set up in the well bore and is then drilled out. Another technique often used is to place a slotted aluminum liner inside the casing. Additional shell is then packed between the casing and the aluminum liner. Tubing is then lowered and the excess walnut shell circulated out of the well bore. This method minimizes the likelihood of open perforations.

Strength of network . . . The consolidated walnut shell can be applied successfully at temperatures ranging from 70° to 280° F. Tensile strength of the set network is from 150 to 200 psi, depending upon pressure and temperature conditions during setting. It has a compressive strength of 1500 to 2000 psi. In laboratory tests, the unset shell network has withstood 7500 psi differentail pressure without crushing the individual particles. The network resists abrasion by extremely fine sands (325 mesh), and does not cut out with use.

The durability of the consolidated



The Sandlock process consists of pumping particles of walnut shell, coated with liquid plastic, into incompetent sand formations. When the plastic hardens it produces a consolidated walnut shell network, which keeps sand out while allowing oil to flow through freely. Often an aluminum screen liner is also placed inside the casing.

Warren L. Sallee is District Sales Manager for Dowell Incorporated at New Orleans. He was was born in Brady, Texas, and received his early education at Brady and Abilene schools. In 1949, he received a B. S. degree in mechanical engineering from the University of Texas. Upon graduation he joined Dowell as a junior service engineer at Alice, Texas.

Sallee

He was promoted to service engineer in 1950 at Snyder, Texas, and later to area engineer at Hobbs, New Mexico. After a period of service as sales engineer in the company's general office at Tulsa, he became New Orleans District Engineer in 1955. He assumed his present duties in November, 1956.

shell is illustrated by the fact that the first Sandlock job is still controlling sand successfully in the treated well after several year's production. To date, about 350 Sandlock treatments have been performed.

New technique . . . Recently, a new technique for preparing the plastic-coated walnut shell has been developed. After the shell has been ground and graded, it is precoated with plastic at the processing plant, rather than at the well site. This plastic coating is only partially set and softens at bottomhole temperatures. After the individual particles have bonded together in the well into a consolidated network, the plastic hardens into a hard set.

Although the tensile and compressive strengths of the set precoated shell are somewhat lower than those obtained with on-the-site mixing, they are high enough to perform satisfactorily in the well.

PICTURE CREDITS

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Phillips Petroleum Co.—Pages 23-25
British Petroleum Co.—Page 29
Humble Oil & Refining Company—Pages 42-43
Dowell Inc.,—Page 44
W. B. Joseph and Associates—Pages 47-48-50-52-53
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Why risk soft seals in your well heads when you don't use them in flanges? Specify Rectorheads and you can "seal-with-steel" between casing strings.

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REPRESENTATIVES IN ALL ACTIVE FIELDS

Geologist analyzes the . . .

Offshore Outlook

Fifty trillion cubic feet of gas and ten billion barrels of oil may be discovered off the Gulf Coast in the next 25 years

It has been approximately ten years since the start of active drilling exploration in the offshore area of Louisiana. During this past decade many prominent underwater geologic structures have been explored by the drill in the search for oil, gas and sulphur. Much more drilling will be necessary in the future years to fully explore the offshore area for these resources.

It is my intention to outline briefly and broadly the known petroleum reserves in the offshore area, and to point to the reasonable expectancy of future discoveries.

Erosional deposits . . . Oil and gas are found throughout the world in sediments related to areas that have been, in geologic history, areas of depression and hence of deposition of erosional debris.

The oil in the Middle East is within such an area, and also the Mesopotamian Basin. The prolific fields around Los Angeles are related to the thick sediments of the Los Angeles Basin, and those in our Gulf Coast are related to the sediments of the Gulf Basin, which includes the entire Gulf of Mexico.

The sediments that have been deposited off Louisiana and Texas in really thick deposits are believed to be limited to an area having a width of maybe 100 to 200 miles. They are deposited not too far from the shore lines as they existed from time to time.

There were many excursions of the sea inland and also outward movements of exposed land, permitting sands and interbedded shales to be distributed over a fairly wide area.

Area of deposits . . . This area of the deposition of favorable sediments extends, I believe, along an axis that roughly follows the present shore line in Louisiana and Texas. These deposits are known to extend inland various distances of from 50 to more than 100 miles, and they are presumed to extend seaward probably similar distances.

I shall deal with an area offshore of both states and extending to an average distance of 50 miles.

The sediments involved are of Miocene and Oligocene ages. Each formation becomes the important source of hydrocarbons, depending upon its depth and depositional position in respect to the axis of the sedimentary trough.

Coastal fields . . . Let us look at what has been found in the onshore portion of this Coastal Basin. Here we deal with the part within the United States, i.e., in the coastal fields in Louisiana and Texas. These extend from the Mississippi Delta area to the Rio Grande, about 700 miles long and averaging, we will say, about 50 miles wide.

Exploration has been active within this area of 52,500 square miles, especially in later years, to an average depth of about 8300 feet. The sediments thus explored involve about 82,000 cubic miles of sediments.

Recoverable proved reserves . . . The area just described includes, from a practical standpoint, Districts 2, 3, and 4 in Texas and South Louisiana. As of January 1, 1957, I estimate the ultimate recoverable proved reserves to be 135 trillion cubic feet of marketable gas and 20 billion barrels of oil and liquid hydrocarbons. Of these amounts, withdrawals to January 1, 1957 were 33 trillion cubic feet of gas and 9.5 billion barrels of oil and hydrocarbon liquids, leaving 102 trillion cubic feet of gas and 10.5 billion barrels.

Future discovery . . . The future of discovery in this area is anybody's guess. My neck is out with a guess that we may add something of the order of 50 to 75 trillion cubic feet of gas and of the order of 5 billion barrels of oil and other liquid hydrocarbons.

This estimate of ultimates indicates about 3.8 billion cubic feet of gas and 305,000 barrels of liquids per cubic mile of sediments.

Comparison to offshore . . . Following this theme along, consider the offshore segment of this petroliferous basin—a strip say 700 miles long and averaging 50 miles wide. We have again 35,000 square miles. Since exploration here is likely to average as much as 15,000 feet, we will deal with about 100,000 cubic miles of sediments.

Offshore sediments yield . . . Some say that the offshore sediments should give a better result per unit of rock than the inshore area. But assuming an equal result, there is indicated gas of the order of 240 trillion cubic feet, and liquid hydrocarbons of the order of 30 billion barrels.

That is about 70 per cent as much gas and about one-third as much oil as has up to now been found in the entire United States.

Early exploration . . . Before discussing further the expectancy of the offshore area, I think it well to review the results of exploration to date within that area.

In 1947, Kerr-McGee Oil Industries, Inc. drilled the first commercial oil well located in Block 32, Ship Shoal area, Terrebonne Parish, Louisiana. Since that time, some 400 exploratory wells have been drilled off the coast of Texas and Louisiana. Most of this exploratory drilling effort has been offshore from Louisiana. This program resulted in the discovery of 99 oil and/or gas fields.

Offshore Louisiana production and reserves . . . As of January 1, 1957, the fields offshore from Louisiana had proved reserves that I estimated to be 12 trillion cubic feet of gas and 1 billion barrels of liquid hydrocarbons.

It is my estimate that the present tempo of offshore drilling is yielding approximately 3 trillion cubic feet of gas and 1 billion barrels of liquid hydrocarbons. It is my estimate that the present tempo of offshore drilling is yielding approximately 3 trillion cubic feet of gas and 325 million barrels of liquid hydrocarbons of new reserves per year.

Offshore future . . . If this offshore discovery rate continues for the next 25 years, the resulting addi-

(Continued on page 76)

Ralph E. Davis was one of the speakers at the Institute on Offshore Drilling Operations presented by the School of Law, University of Texas. Excerpts from the speeches presented at the institute will be printed in succeeding issues of OFFSHORE.

A complete transcript of the proceedings has been prepared by The Offshore Company of Baton Rouge, Louisiana, and will be furnished upon request without cost.

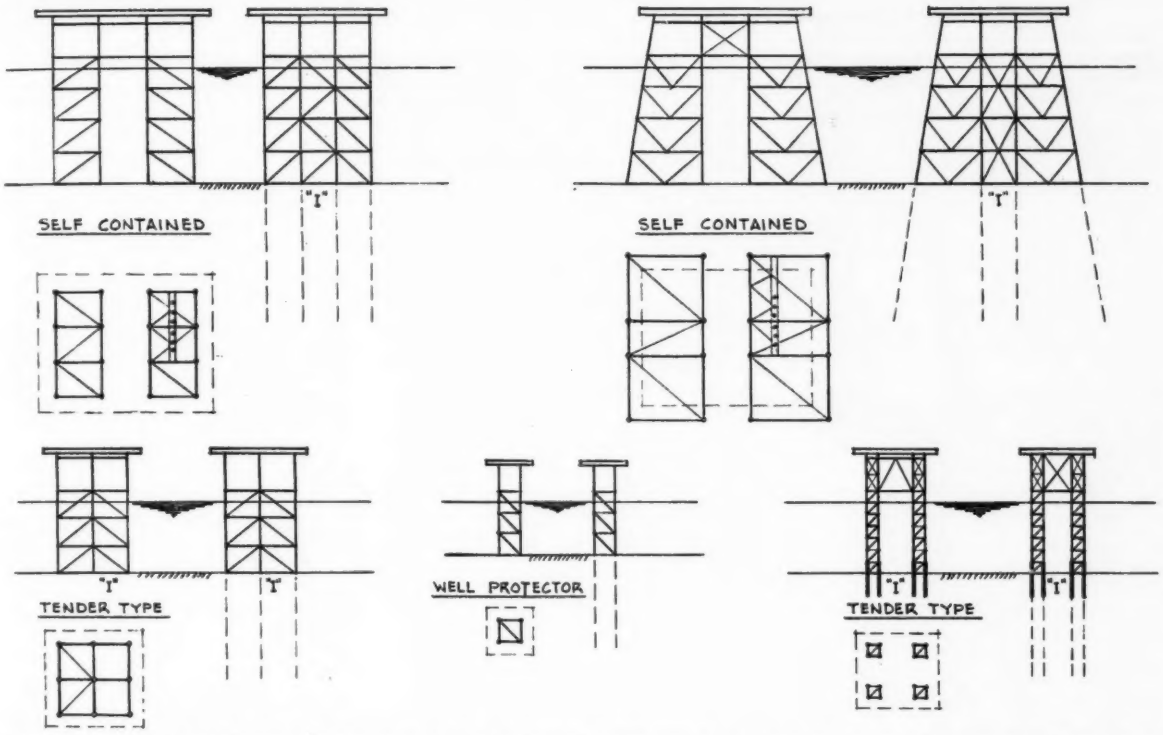

Figure 1 shows the basic structural configurations of offshore fixed platforms now in use. The figure "I" denotes static indeterminancy. Which configuration used depends largely upon preferred equipment layout and structural advantages to be gained by special positioning of equipment.

Part II of an . . .

Analysis of Offshore Structure Design

By R. W. McDONALD, Associate
W. B. Joseph and Associates, Professional Engineers

THE first step in designing the structural framework for an offshore platform is to determine the configuration, or pattern, of framing members. (See Figure 1.) This is usually accomplished by reference to functional requirements and equipment layout and structural advantages to be gained in their arrangement.

Major gravity loads that must be supported in various positions are such items of equipment as derrick, sub-structure, engines, drawworks, mud pumps, mud tanks (full or empty); and supply storage for mud and cement, drill pipe and casing, potable water, drilling water and fuel. In addition, there are other definitely live loads such as the drilling loads, which consist primarily of variable amounts of casing or drill stem, or both, which are alternately supported from top of derrick and derrick floor. Also, there is usually a heliport atop one of the buildings away from the derrick.

Sometimes a platform must be designed for above-water oil storage or for conversion to storage after completion of drilling.

Storm forces . . . For all of the complexities of gravity loading, they are usually easier to design for than storm forces. Unit wave pressures, maximum crest heights, and patterns of pressure variation of a purely hypothetical twenty-five year or fifty year hurricane are in much "dispute." Changing assumed member sizes to safely resist computed

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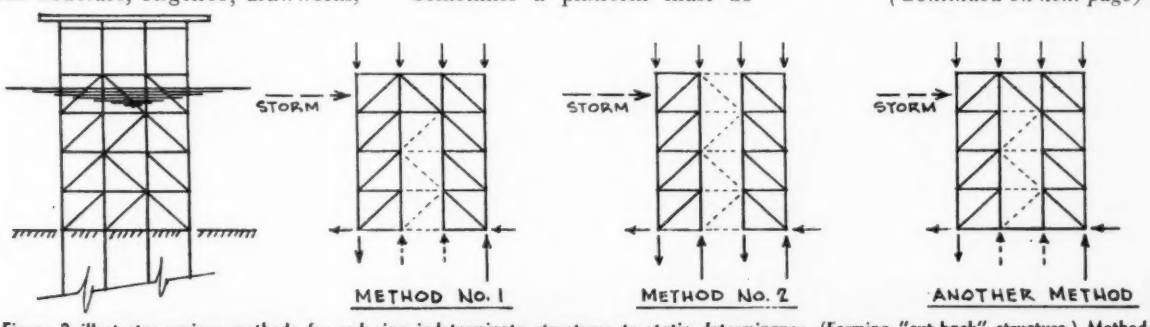

Figure 2 illustrates various methods for reducing indeterminate structures to static determinancy. (Forming "cut-back" structure.) Method No. 2 has more redundants, but is convenient for solution by electronic computer. The computer sums the vertical and horizontal components of all known loads and stresses concurrent at each joint, in order to determine the unknowns.

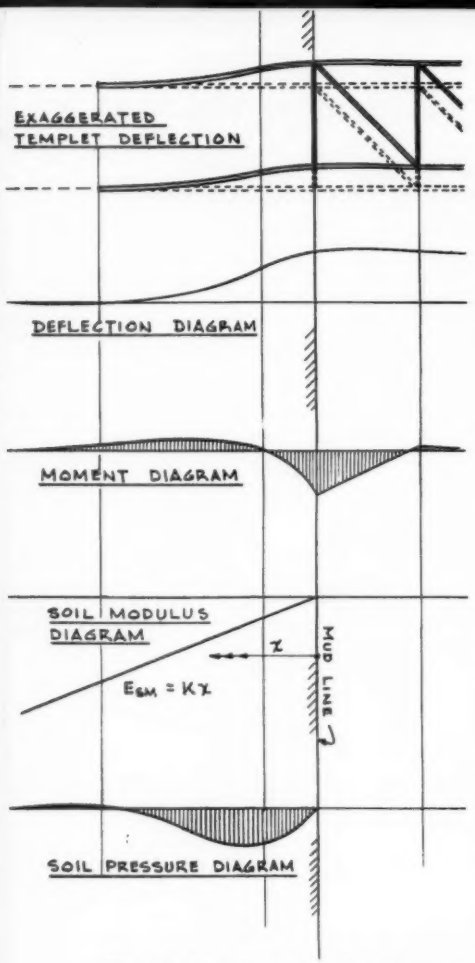

Figure 3 shows the inter-action between extended templet legs and the soil.

Offshore Structures

(Continued from preceding page)

stresses changes the total storm loads and computed stresses on the structure. These lateral forces cause deflection which induces secondary moment and flexural stress, thereby partially relieving computed primary stresses that caused the deformation which induced the moments!

Member sizes . . . Having determined the configuration of the structure, the next step is to assume member sizes, in order to calculate wave forces. These forces vary in almost linear relationship with the member sizes, so that large errors in assumed sizes will cause disconcerting results on the first trial. However, an experienced designer can usually guess within two inches of the required diameter for most member sizes.

Preliminary assumptions for member sizes should be made as accurate as possible by approximate methods. This holds the major changes of member sizes to a minimum, and usually limits the number of "exact" solutions required for good design at two.

Computation of wave forces is a fairy simple mechanical operation, once the particular set of wave data to be used has been determined. But there are at least three recognized authorities on this subject, and since a superficial comparison of results sometimes discloses wide variations among them, it is not always easy to decide which to use. In any case, it is highly recommended that oceanographic data be obtained from a reputable source for the specific locality under consideration; and equally important, that such data not be subsequently misapplied to other localities.

Check piling . . . As soon as lateral loads have been evaluated, the piling should be checked. Since vertical forces—particularly gravity loads—are of much less significance in sizing the piling than the lateral forces, some rather large errors in assumed vertical load may be tolerated at this point for the first check.

Amount of vertical load on a pile determines the depth of penetration required to resist it, but has only a small effect on the maximum stress, which is primarily flexure induced by horizontal shear at the mud line. Muds in the upper strata are nearly always soft and yielding: when a horizontal load is applied to the pile, it deflects in the direction of the load because the low strength of the mud requires a large contact area and great displacement to develop resistance. (See Figure 3) Meanwhile this deflection automatically induces large bending stresses in the piling—so large that the pile size is nearly always one of the primary determinants in design of such structures. If the new pile size requires a revision of lateral load calculations this should be taken care of before proceeding with the problem.

Lateral load analyses for piling may be accomplished by different methods: one is known as Limit Analysis, and another is called difference Equations. The difference Equation solution has been facilitated by construction of nomographic-type charts, which render quick solutions with reduced effort. This method has also been programmed for solution on different types of electronic computers. Each has certain theoretical objections, but so far no other method has been offered which better satisfies all requirements.

Axial stresses . . . Having obtained a trial piling size, the designer can proceed with a solution for primary (axial) stresses in the trussed structure. If it be statistically determinate, this solution is relatively simple, and may be obtained by drawing a stress diagram, or by the method of joints. Unfortunately, due to the large plan size, and loads carried by many of the drilling platforms, two or more of the structural framing planes may be statistically indeterminate to the second degree or more. This multiplies the complicity, and too often has discouraged any attempt to obtain theoretically true stresses, since the difficulty of manual solution increase almost astronomically with each redundant added! (See Figure 4.)

It is now possible, however, to obtain theoretically "exact" solutions to indeterminate structures with as many as fifteen or twenty redundants, in a matter of two or three days, and with a small fraction of the manual effort formerly required. This can be done with the aid of electronic digital computers—the I. B. M. 650 being the machine utilized by the writer and associates, and for which the complete program is now available throughout the country. (It should be pointed out that this quick solution refers to the primary stresses in one plane only, in the main trussed templet, and does not include loading the structure, analyzing the deck and vierendeel legs, checking the piling, or revising any member sizes as would be required for design.)

This program, which was sponsored jointly by Fares Hanna & Associates and the University of Houston Computer center, has proven its time, effort, and error-saving value on many problems—most of them offshore structures. The bulk of manual effort still required for the primary stress solution of statically indeterminate structures (after loading) lies in coding the problem for key-punching. This coding operation may take three to fifteen man-hours for one face, or struc-

(Continued on page 50)

Acknowledgment is made to the following people for their suggestions, constructive criticism, and encouragement. Comments made by them have greatly assisted the writer in improving the readability, accuracy, and completeness of this presentation.

Dr. E. W. McMillin, Professor of Architecture, The University of Houston, Houston, Texas.

Mr. R. V. Cross, The California Company, New Orleans, Louisiana.

Mr. W. B. Joseph, W. B. Joseph and Associates, Houston, Texas.

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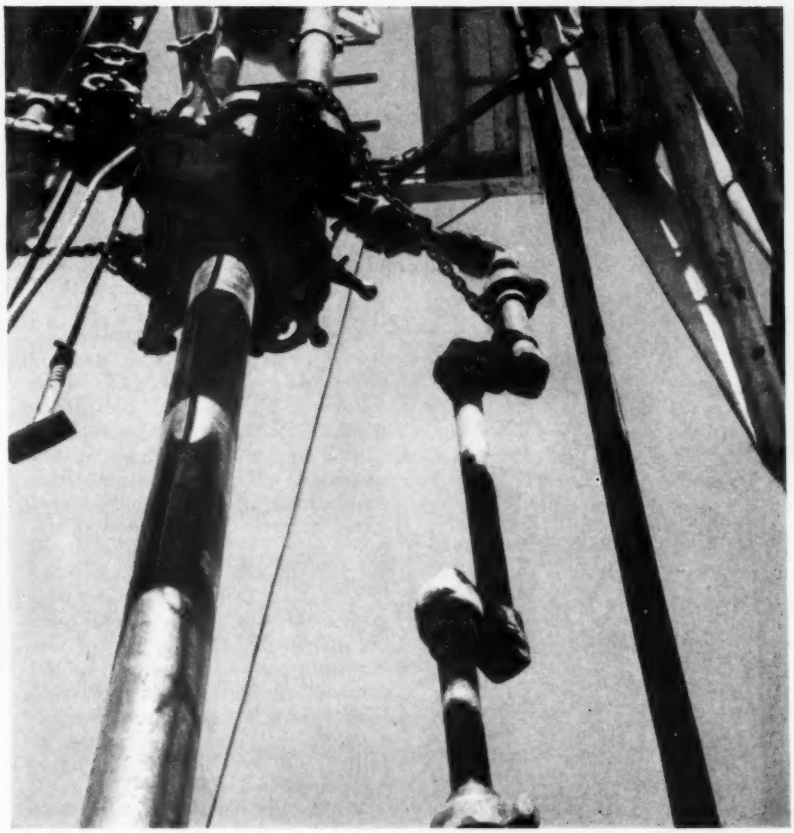

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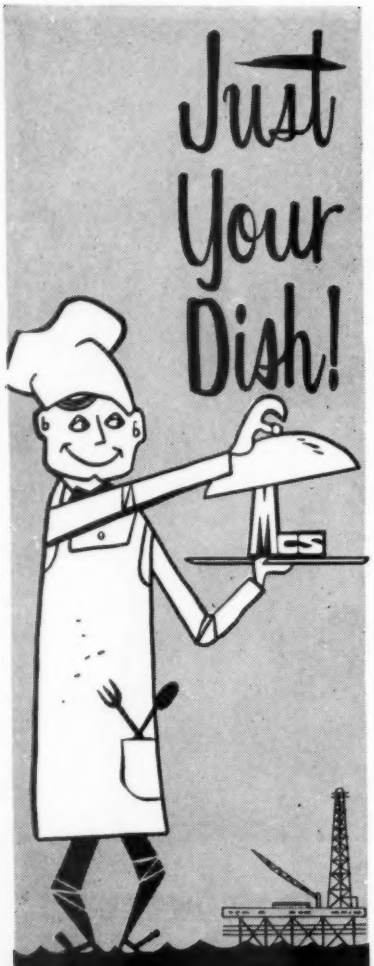

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(Continued from page 48)

tural plane, depending on the size and complexity of the structure. It will be closer to three for structural planes containing up to about fifty members and less than ten redundants. In any case, a structural plane with as few as three redundants can be solved quicker, cheaper, and more accurately with the computer than by manual effort.

Coding for the computer . . . Basic information that must be coded for each truss consists of the following: "X" and "Y" coordinates of each joint (the structure being contained completely in the first quadrant), the number of non-redundant members meeting at each joint, number identification of the two joints connected by each member, length and area of each member, and control cards giving total number of members, and total number of joints in the structure. Loading information for each problem consists of identification of each joint where a load or reaction, or a redundant (unit) load occurs, together with vertical and horizontal components. (See Figure 5.)

When the problem has been coded, it is ready to be key-punched onto cards for insertion into the computer. It will require as many cards as there are joints, plus two times the number of members, plus points of real load application, plus points of redundant stress application, plus several other cards necessary for problem control. All of these can usually be punched by an experienced operator in a matter of an hour or so. Cards, together with the program deck, are fed into the machine by the mathematician-operator. Depending on complexity of the problem, it may punch out final answers for supposedly true stresses in all members (including redundants) in a matter of thirty to forty-five minutes, or perhaps in an hour!

The computor goes about the solution in basically the same way that an engineer would do it manually, except that the engineer must make certain decisions ahead of time, which the machine cannot make. For instance, it must be decided which members and reactions will be considered redundant, so as to cut the structure back to static determinancy. (Even this may eventually be done by the computer.) The machine solution for the truss, like the manual solution, is always for a statically determinate structure. The computer examines each joint in sequential order, solving the ones that it can, and by-passing others until it again finds a soluble joint. It sums the vertical and horizontal components of all known loads and stresses concurrent at each joint, in order to determine the unknowns. Obviously, it will be advantageous to number the joints in the same order in which they can be solved, to reduce computer running time.

When the computer has completed solution of the statically determined, "cut-back" structure for the real loads, and for each of the "U" load conditions, one phase of the problem is over. Next, the information so obtained is fed back in to have the individual computations made for $\frac{SUL}{AE}$, $\frac{UUL}{AE}$, $\frac{UL}{AE}$, etc. Appropriate runnings totals for

$\Sigma \frac{S_1 U_1 L}{AE} + R_1 \Sigma \frac{U_1^2 L}{AE} = 0$	①
$\Sigma \frac{S_1 U_1 L}{AE} + R_1 \Sigma \frac{U_1^2 L}{AE} + R_2 \Sigma \frac{U_1 U_2 L}{AE} = 0$ $\Sigma \frac{S_1 U_2 L}{AE} + R_1 \Sigma \frac{U_1 U_2 L}{AE} + R_2 \Sigma \frac{U_2^2 L}{AE} = 0$	②
$\Sigma \frac{S_1 U_1 L}{AE} + R_1 \Sigma \frac{U_1^2 L}{AE} + R_2 \Sigma \frac{U_1 U_2 L}{AE} + R_3 \Sigma \frac{U_1 U_3 L}{AE} = 0$ $\Sigma \frac{S_1 U_2 L}{AE} + R_1 \Sigma \frac{U_1 U_2 L}{AE} + R_2 \Sigma \frac{U_2^2 L}{AE} + R_3 \Sigma \frac{U_2 U_3 L}{AE} = 0$ $\Sigma \frac{S_1 U_3 L}{AE} + R_1 \Sigma \frac{U_1 U_3 L}{AE} + R_2 \Sigma \frac{U_2 U_3 L}{AE} + R_3 \Sigma \frac{U_3^2 L}{AE} = 0$	③
$\Sigma \frac{S_1 U_1 L}{AE} + R_1 \Sigma \frac{U_1^2 L}{AE} + R_2 \Sigma \frac{U_1 U_2 L}{AE} + R_3 \Sigma \frac{U_1 U_3 L}{AE} + R_4 \Sigma \frac{U_1 U_4 L}{AE} = 0$ $\Sigma \frac{S_1 U_2 L}{AE} + R_1 \Sigma \frac{U_1 U_2 L}{AE} + R_2 \Sigma \frac{U_2^2 L}{AE} + R_3 \Sigma \frac{U_2 U_3 L}{AE} + R_4 \Sigma \frac{U_2 U_4 L}{AE} = 0$ $\Sigma \frac{S_1 U_3 L}{AE} + R_1 \Sigma \frac{U_1 U_3 L}{AE} + R_2 \Sigma \frac{U_2 U_3 L}{AE} + R_3 \Sigma \frac{U_3^2 L}{AE} + R_4 \Sigma \frac{U_3 U_4 L}{AE} = 0$ $\Sigma \frac{S_1 U_4 L}{AE} + R_1 \Sigma \frac{U_1 U_4 L}{AE} + R_2 \Sigma \frac{U_2 U_4 L}{AE} + R_3 \Sigma \frac{U_3 U_4 L}{AE} + R_4 \Sigma \frac{U_4^2 L}{AE} = 0$	④

Figure 4 is a comparison of simultaneous equations involved in solutions for indeterminate structures with one, two, three, and four redundants. After "S_1" stresses and "U" stresses are obtained, the electronic computer can perform all indicated arithmetic operations (including inversion of matrix) in a matter of minutes.

these quantities are simultaneously accumulated, so that these summations are available almost as soon as the last card is read in. (See Figure 4.)

At this point it bcomes possible to form, and to require the computer to invert the matrix corresponding to the set of simultaneous equations for the unknowns—the redundant stresses and reactions. With these reduntant values determined, the machine is then in position to compute the "true" stress for each member by algebraically adding $S_1 + R_1U_1 + R_2U_2 + -$.

Recheck answers . . . When answers are obtained from the computer they should be verified. This may be accomplished by proved external equilibrium ($\Sigma V = 0$, $\Sigma H = 0$, $\Sigma M = 0$) for the structure as a whole. Since external reactions are functions of internal elastic action, it would be almost inconceivable that there could be an internal error if the structure is in external equilibrium. However, this may also be verified by checking every joint in the truss.

When a solution is obtained which satisfies all conditions of external and internal equilibrium, the designer should immediately compare computed primary stress with axial allowable for each member. In doing this, the maximum combined stress for each member should be used, which will often include effects of gravity dead and live loads, as well as storm forces. In addition to this, the critical stress for some members will be tension; for others, compression; and a few may be critical in both tension and compression. This may require a rather complicated member tabulation sheet (an example of which may be seen in Figure 6), but once the form of it is established it is usually rather perfunctory to fill in the blanks.

Bending stresses . . . For this first comparison of computed primary stress with axial allowables, the designer will be wise to use judgment in making allowance for bending stresses. To illustrate, there may be large moments entering a conventional trussed frame at top and bottom, from bending in the piling. Therefore, a sizable allowance should be made in all members (particularly the larger ones such as jacket legs) at top and bottom, growing rapidly smaller toward mid height. In this central portion of the trussed frame, about the only moment encountered (other than that due to direct wave pressure between

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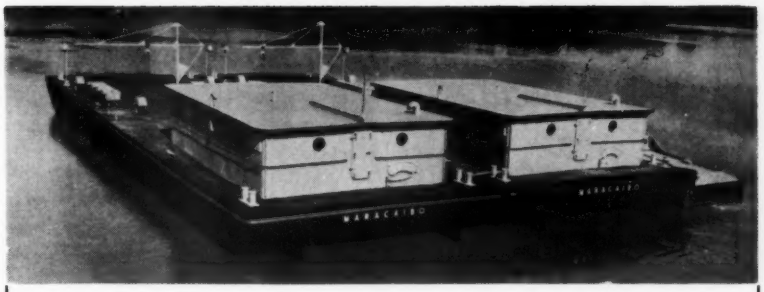

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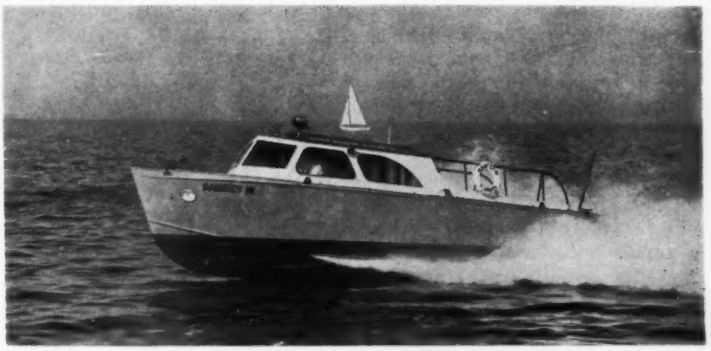

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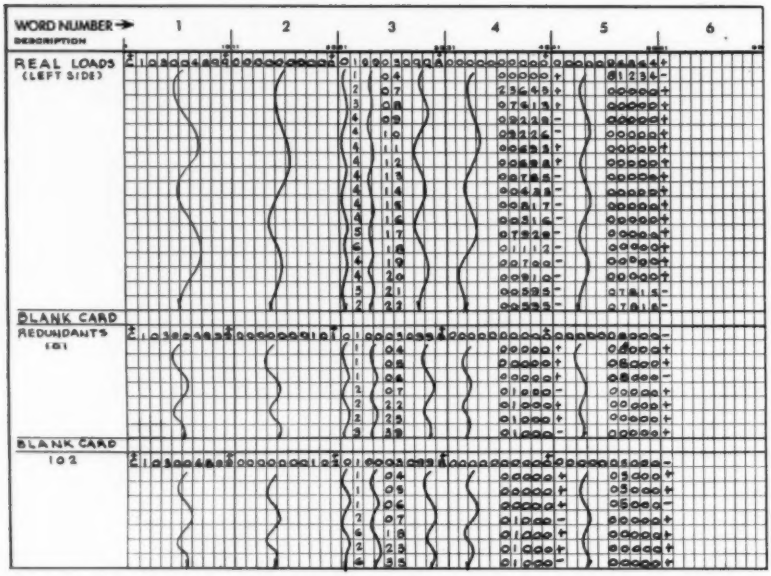


Figure 5 illustrates the loading information needed for each problem. It consists of identification of each joint where a load or reaction occurs, together with vertical and horizontal components.

Offshore Structures

(Continued from preceding page)

panel points) is due to distortions caused by deflection under primary stresses—that is, true secondary moments. Stresses due to bending at top and bottom may approach, or even exceed primaries in magnitude, whereas such bending stresses in the central portion are not likely to be greater than five to fifteen percent of the primaries. (Flexural stresses caused by direct wave pressure between panel points may occasionally exceed this.)

If, after such approximate allowances have been made for bending (and piling size has been rechecked), it is found necessary to make extensive revisions of member sizing, it will likely be advisable to back-track and repeat most of the steps up to this point, using the new member sizes. (Remember that changing member diameters also changes the real loading!)

Before proceeding it may be well to flash back and clarify two previous implications about vertical loads on piling, and vertical reactions on the trussed structure. It has been the observation of the writer that in almost every case the point of inflection in the piling (assumed fixed against rotation at mud line) lies between ten and fifteen feet below mud, hence it has become a practice to assume it at twelve feet down for purposes of computing vertical reactions on piles. However, since truss theory assumes that members cannot be subjected to bending, the horizontal reactions must be moved up to the bottom of the truss for its solution. This is compensated for by applying an external moment at each bottom joint equal to the horizontal reaction times twelve feet, and by applying a horizontal couple of the same magnitude—one force at the mud line counter to the storm, and one force at the first tier above mud acting with the storm forces. (Figure 7). The external moments at bottom joints may then be distributed with secondary fixed-end moments, and otherwise disregarded.

A slightly more exact method is to distribute these external moments through the frame first (they will damp out and become insignificant above the third tier). Then from the member shears induced by these moments, the forces are found that must be added to the panel point loads, to compensate for having pulled the horizontal reactions up to the mud line.

Deflection diagram . . . When a solution is obtained yielding primary stresses with a reasonable "cushion" for secondaries, the next step is to deflect the structure under influence of primary stresses, and determine the actual secondaries thereby induced. The writer has found the method recommended by R. P. V. Marquardsen to be the most useful, since the deflection diagram is simple to draw, bears an obvious physical resemblance to the real deflected structure, and results in joint displacements magnified 250 times. These relative joint displacements can be readily scaled, and used in computing fixed-end moments for distribution to obtain the first-trial secondary moments. (See Figure 8.)

The mechanics of producing and interpreting the deflection diagram are briefly as follows:

(1) Compute $\frac{PL}{AE}$ for each member, using primary stress for "P", and 116,000 for "E", which is the actual modulus divided by 250. (Here, as well as throughout the analyses for both primary and secondary stress, the elastic

MEMBER MARK	MEMBER ASSUMED SIZE	MEMBER PROPERTIES I_{in}^4	L"	r"	A □	L_r	MAX. GRAV. P^K	MIN. GRAV. P^K	STORM LEFT P^K	STORM RIGHT P^K	MAX. COMB. P^K	ALLOW. P_A^K	SIMULTANEOUS S^K	MAGNIFIED P_E'	BUCKLING LENGTH L_b"	SECT. L	MOM. M_{FB}^{K}	ALLOW. M_A^{FB}	SUM OF RATIOS $P/P_A + M/M_A$	SUM
01	10 WF 57	294.7	1680	4.19	16.76								-105.42							
02													-95.17							
03													-44.28							
04	10 WF 57	294.7	1680	4.19	16.76								-45.73							
05	16 WF 120 (6 feet)	1678.2	180	7.70	51.93	11.7						-1169	+44.54				16.6	542	.030+.344	.344
06		562.1	(	5.55	18.61	16.9						-413	+44.9				14.2	156	.109+.091	.20
07												(	+44.12				8.0	156	.107+.049	.156
08												\	+37.43							
09			120			16.9						-413	+24.19							
10			180			23.6						-410	+81.23							
11		562.1	180	5.55	18.61	23.6						-410	+65.71							
12	(6 feet)	1678.2	120	7.70	51.93	11.7						-1169	0000				16.6	542	0 + .344	.344
13		562.1	(	5.55	18.61	16.9						-413	-44.54				14.1	156	.108+.091	.117
14												(	-44.91				8.1	156	.107+.052	.127
15												\	-44.17							
16			120			16.9						-413	-37.43							
17			180			23.6						-410	-84.71				7.27	156	.207+.042	.249
18		562.1	180	5.55	18.61	23.6						-410	-75.64							
19	(6 feet)	1678.2	120	7.70	51.93	11.7						-1169	+44.43				16.6	542	.081+.344	.344
20		562.1	(	5.55	18.61	16.9						-413	+52.48				14.2	156	.127+.061	.188
21												(	+52.04				8.0	156	.123+.019	.142
22												\	+46.64							
23			120			16.9						-413	+58.07							
24	16 WF 63 (6 feet)	567.1	180	5.55	18.61	23.6						-410	-131.76							

Figure 6 is an example of a member tabulation sheet used to find maximum combined stresses in order to compare computed primary stress with axial allowable for each member.

action of the piling is considered—the full axial stress is assumed to act over a length equal to the distance from the point of connection with the jacket to the point of mid penetration into the mud).

(2) Algebraically add ΔL so obtained for each member to its unstressed length, obtaining a "composite" stressed length.

(3) Starting at base (point of mid penetration of piles) draw composite stressed length of each member parallel to its original axis, always drawing from a joint whose position is known, toward an unlocated joint.

(4) At end of each such stressed length draw a normal to intersect with a similar normal (s) to another member (s). Each such intersection establishes the new position of another joint, allowing the complete deflected structure to be drawn by constructing triangle upon triangle in logical succession.

(5) These composite stressed lengths are expressed in inches, and the scale used is one inch representing one hundred inches.

(6) Since deformations are exaggerated 250 times, the joint displacements on the deflection diagram will be 250/100 = 2.5 times the actual joint displacements in the real structure.

(7) The "fixed-end" moments that would be induced in each member by deflection are equal to $6EK\ \Delta/L$, in which "E" reverts to its true value of 30×10^6, and Δ is the relative displacement of the two ends of the member in a direction normal to its original axis.

Unless there is good reason for the contrary, external moments, such as from piling at mudline, and from vierendeel panels above, may be algebraically added to fixed-end moments induced by deflection, and the two sets of moments distributed together. Here, again, the electronic computer can relieve the engineering staff of a considerable amount of work, because there is a program now available for doing moment distribution. For a large structure the machine can spin through ten iterations, or cycles, in less time than it would take two men to do one cycle; and have no errors at the end!

When moment distribution is completed, secondary stresses can be compared with allowable bending stress, and the sum of ratios may be compared to 1, or to 1:33 with a storm loading, for all members. This is another critical point where a new start may have to be made if many members are seriously overstressed. In this case, it is sometimes permissible to re-do part of the problem without doing all of it over again.

True stresses . . . The foregoing describes the complete design procedure as currently recommended by this firm (and largely developed by members of it). However, it has long been recognized that pursuit of these methods will not yield absolutely true stresses. The reason for this (as earlier implied) is that there is a certain interaction between the primary (axial) and secondary (bending) stresses which prevents an absolute solution for either without reference to the other. In order to get true stresses it would be necessary to apply the method of successive corrections in the following manner, similar to that used in multi-story building frame analyses:

(1) Determine story shear in each vertical panel by algebraically adding all end moments of members crossing the panel (except diagonals), and dividing by the vertical projection of the panel; then algebraically adding the result to the horizontal components of the axial stresses, and of the transverse shears in the diagonals.

(2) Compare story shear thus obtained at each level with actual story shear (from known horizontal loading).

(3) Reduce axial stresses in some proportion related to this comparison (but not the full amount indicated), and make new solutions for both primary and secondary stresses.

(4) Repeat process until correction ratio approaches satisfactorily close to unity in each tier.

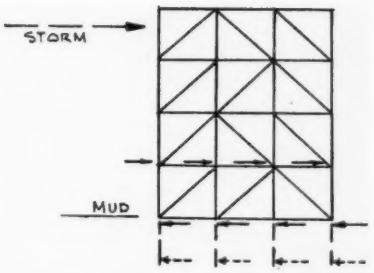


Figure 7 shows equivalent panel loads (shown solid) that simulate effects of external moments entering structure from extended templet legs. (Pile shears producing the external moments are shown dotted.)

It is the belief of the writer that these last four steps have never been incorporated in the analysis of any real offshore structures: however, it has been done for an hypothetical structure, in order to determine the extent of error remaining in an "ordinary" analysis that does not include this refinement. Results of this investigation were recently reported in an article written by E. W. McMillin and L. B. Parker, published in The Oil and Gas Journal on January 13, 1958.

There are few fields of engineering in which the stakes are so high, and where at the same time both economy and ultimate safety are so largely dependent on the skill and good judgment of the design engineer. This fact lends a certain flavor to the work which lifts it above any sense of drudgery, and generates a buoyant atmosphere in which a feeling of deep professional satisfaction is experienced with each successful completion.

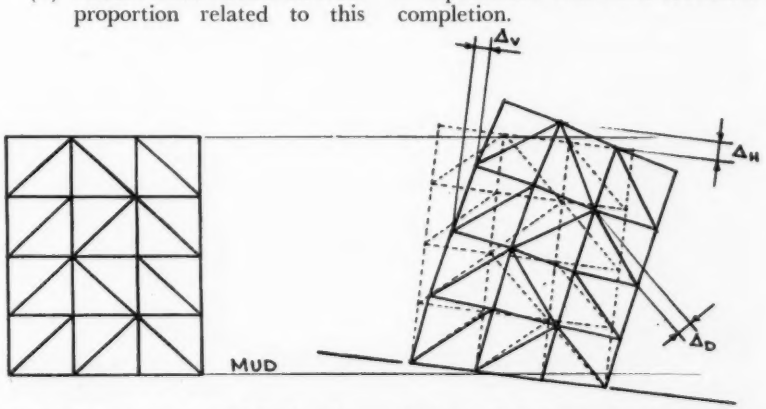


Figure 8 is an exaggerated deflection diagram showing method of measuring deflections for typical vertical, horizontal, and diagonal members. These Δ's are used for computing fixed-end moments.

Claire Chavanne and Drenna Kay Wade (back to camera) daughters of the Chairman of the Board and President of Trans-Gulf Offshore give the drill stem of RIG NO. 10 a hearty smash with the traditional bottle of Champagne.

Two New Deepwater Drill Barges To Operate In Gulf

Dixilyn Drilling Corp. and Trans-Gulf Offshore each christened their first mobile platform

Two contract drilling firms have entered the offshore drilling field with the completion of their multi-million dollar deepwater mobile drilling platforms. The two companies are Dixilyn Drilling Corp. of Odessa, Texas, and Trans-Gulf Offshore Drilling Co. of Houston.

The Julie Ann, Dixilyn's new platform, is a 4000 ton triangular unit built by R. G. LeTourneau, Inc., of Longview, Texas. It is patterned after the **Scorpion** and **Vinegarroon,** platforms belonging to Zapata Off-Shore Co. and **Mister Cap** belonging to Barnwell Offshort Co. Though of the same general design, the **Julie Ann** has longer spuds than either of the other three units. Spuds are 175 ft. long, enabling the platform to drill in waters exceeding 100 ft.

After its christening by Julie Ann and Dixie Lynn Boring, daughters of M. O. Boring, Jr. president of Dixilyn, the platform was towed to its first location in Block 21, South Timbalier Area, where it is now drilling for Gulf Oil Corp.

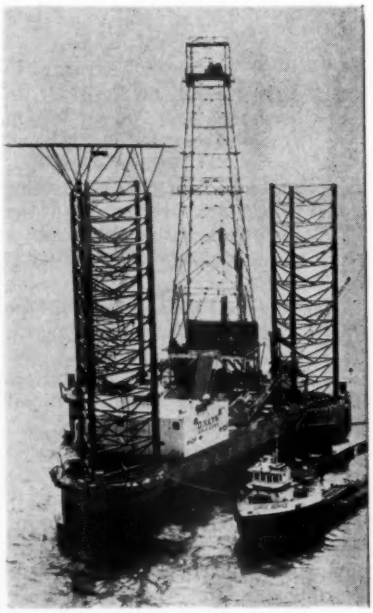
Trans-Gulf Offshore Drilling Co.'s new unit, **Rig 10,** is a 4200 ton, 12 spud, single-hull drill barge built by Port Houston Iron Works.

Hull of the platform is made up of two compartmentalized tubes as perimeter members. These tubes act as storage tanks for drilling fluids and fuel as well as structural members of the hull.

Rig 10 has spuds 142 ft. long at present but they will be extended to 212 ft. at Galveston, while en route to its first drilling site. The 185 ft. by 87 ft. by 21 ft. mobile platform is capable of drilling to 25,000 ft. in up to 75 ft. waters.

Rig 10 was christened at Adams Terminal in Houston by Claire Chavanne, and Drenna Kay Wade, daughters of Trans-Gulf Board Chairman Harry J. Chavanne, and President, Drennan O. Wade.

Drill Barge JULIE ANN about to be christened by Julie Ann Boring and her sister Dixie Lynn. The girls are the daughters of Mr. and Mrs. M. O. Boring, Jr. Mr. Boring is President of Dixilyn Corp.



New Mobile unit JULIE ANN is shown here on its first location for Gulf Oil Corp. in Block 21 South Timbalier Area, off Louisiana.

Mobile Units, Tenders, And Self-Contained Platforms Gulf Coast Area

OWNER	NAME	WATER DEPTH	PRESENT STATUS
Barnwell Offshore, Inc. Self-elevating 176′ x 176′ x 152′ with three 145′ legs	"Mister Cap"	To 100′	Shut down in Main Pass Area
Blue Water Drilling Corp. Submersible	Rig No. 1	70′	Drilling in Block 45, West Cameron Area For Mecom Petroleums
The California Company Submersible 11′ x 90′ x 156′ with four 3′ x 10′ x 35′ pontoons	S-45		Bay Marchand, La., Rowan Drilling Co., contractor
The California Company Submersible 12′ x 90′ x 190′, with four 4′ x 24′ x 50′ pontoons	S-55		Bay Marchand La,. Noble Drilling Co., contractor
Continental Marine Exploration Co. Submersible 230′ x 99′ with 54′ between fixed hulls	"M & H Drilling Platform No. 12"	To 35′	Drilling in Block 11 South Timbalier for The Texas Co.
Coral Drilling Company Submersible 180′ x 151′ x 84′ with four pontoons	"Mr. Arthur"	To 70′	Drilling in Block 10, E. Cameron Area, Coral Drilling Co.
Deepwater Exploration Co. Self-elevating overall 121′ x 118′	"Deepwater No. 2"		Completely salvaged unit at LeTourneau, Vicksburg yard.
Delta Marine Drilling Co. Submersible	"Chris Zeppa"	To 35′	Block 66, East Cameron Parish
Dixilyn Drilling Corp. Self-elevating 194′ x 152′ overall. Three 175′ legs	"Julie Ann"	To 105′	Drilling in Block 21, Gulf of Mexico, for Gulf Oil Corp.
C. G. Glasscock Drilling Co. Self-elevating 15′ x 80′ x 225′	"Mr. Gus I"		Being salvaged after capsizing
C. G. Glasscock Drilling Co. Self-elevating. Deck 258′ x 104′, pad 200′ x 180′ with four 10′ dia. columns	"Mr. Gus II"	138′	Drilling in Block 70, West Delta Area for CATC
Gulf Marine Drilling, Inc. Submersible	Rig No. 1	30′	Drilling La. St. 192 for Gulf
Kerr-McGee Oil Ind., Inc. Submersible 13′ x 54′ x 160′ with two 13′ x 14′ x 110′ pontoons	Rig 40	To 20′	Drilling for Pure Oil Co., Block 31, Eugene Island Area
Kerr-McGee Oil Ind., Inc. Submersible 13½′ x 72′ x 140′ with two 13½ x 13½′ x 140′ pontoons	Rig 44	To 40′	Drilling in Block 28, Ship Shoal Area for Kerr-McGee, et al.
Kerr-McGee Oil Ind., Inc. Submersible 142′ x 69′ x 13′6″, with two 10′ x 11′ x 146′ pontoons	Rig 45	35′	Waiting on new location
Kerr-McGee Oil Ind., Inc. Submersible	Rig 46	To 70′	Drilling in Block 39, Vermilion Area for Pure Oil Co.
Kerr-McGee Oil Ind., Inc. Submersible	Rig 47		Drilling for Kerr-McGee and Phillips in Block 39, Vemilion
Louisiana-Delta Offshore Corp. Submersible 180′ x 151′ x 12′	Not announced	To 65′	Under construction at Ingalls Shipbuilding Corp.
Louisiana-Delta Offshore Corp. Submersible 156′ x 90′	"Delta Offshore No. 1"	To 25′	Stacked
Magnolia Petroleum Co. (Drill barge on piling)	Rig 52		Out of service
Marine Drilling Inc. Submersible 12′ x 74′ x 200′ with four fixed pontoons	"101"	To 45′	Drilling Cameron Area for Mecom Petroleums
Movible Offshore Co. Robert Macy Design 201′ x 211′ x 110′	"Movible No. 2"	To 80′	Drilling for Shell, Mustang Island Area
Noble Barge Co. Twin-hull submersible 217′ x 100′	"Lloyd Noble S-66"	To 100′	Being built at Avondale Marine Ways

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OWNER	NAME	WATER DEPTH	PRESENT STATUS
Ocean Drilling & Exploration Company Submersible 200′ x 300′ x 98′	"El Dorado"	To 70′	Under contract at Alabama Dry Dock and Shipbuilding Company for early 1958 delivery. Upon delivery will drill offshore from Isthmus of Tehuantepec, Mexico, on Gulf side
Ocean Drilling & Exploration Company Submersible 132′ x 220′ x 58′	"Mr. Charlie"	40′	Drilling for Shell Oil, Block 27, South Pass Area
Ocean Drilling & Exploration Company Submersible 120′ x 180′ x 49′	"John Hayward"	30′	Drilling for self, et al. Block 9, East Cameron Area
Ocean Drilling & Exploration Company Submersible 200′ x 300′ x 93′	"Margaret"	To 60′	Drilling for Shell, Block 128, Ship Shoal
Ocean Drilling & Exploration Company Submersible 120′ x 180′ x 50′	"St. Louis"	To 30′	Drilling for Shell, Block 27 South Pass Area
The Offshore Company Self-elevating 8½′ x 70′ x 203′ with twelve 6′ dia. caissons	Mobile Unit No. 51		Undergoing modification
The Offshore Company Self-elevating 13½′ x 117′ x 220′ with fourteen 6′ dia. caissons	Mobile Unit No. 52		Corpus Christi Mustang Area
The Offshore Company Submersible 12′ x 74′ x 200′ with four 6′ dia. caissons	Mobile Unit No. 53		Block 84-S, High Island Area
The Offshore Company Self-elevating 200′ x 104′ x 15′ with eight 12′ dia. towers	Mobile Unit No. 54		Block 63 S. Timbalier Area
The Offshore Company Self-elevating 200′ x 104′ x 15′ with eight 12′ dia. towers	Mobile Unit No. 55		Grand Isle Area
The Offshore Company Self-elevating	Mobile Unit No. 56		Under Construction by American Bridge, Orange, Texas
Penrod Drilling Company Submersible 150′ x 190′	"Jim Woodruff"	To 70′	On location in South Timbalier Area
Placid Oil Co. Twin submersible hulls, each 72′ x 178′	Unnamed	To 100′	Being built by Levingston at Orange
Reading & Bates Offshore Drilling Company Self-elevating	"C. E. Thornton"	To 90′	Being built by LeTourneau for delivery March, 1958
Rimrock Tidelands, Inc. Submersible	Unnamed	To 35′	Under construction for March, 1958 delivery by Southern Shipbuilding Corp., Slidell, La.
Sea Drilling Corp. Submersible	"Seadrill 2"	30′	Contract awarded to American Marine Corp., New Orleans
Sea Drilling Corp. Submersible	"Seadrill 3"	30′	Drilling for The Texas Co. South Caillou Island Area
Sea Drilling Corp. Submersible	"Seadrill 4"	45′	Contract cancelled
Southeastern Drilling Corp. Submersible 11′ x 90′ x 156′ with four pontoons	Rig 22, Barge 8		Drilling for Ocean Drilling and Exploration, Block 45, Main Pass, Well 3
Trahan Exploration, Inc. Submersible 66′ x 136′ x 180′	"Mr. Bob"	To 50′	To be built by American Bridge, Orange, Texas
Trans-Gulf Offshore Drilling, Inc. Self-elevating	"Trans-Gulf No. 10"	75′	Under construction by Port Houston Iron Works for November delivery
Union Producing Co. Submersible 160′ x 190′	Unnamed	To 76′	Under construction at Todd Shipyards Corp., Houston
Universal Drilling Company Self-elevating	"Mr. Louie"	To 130′	Under construction by Port Houston Iron Works
Zapata Off-Shore Company Self-elevating. 194′ x 152′ overall. Three 145′ legs	"Vinegaroon"	To 80′	Block 68, Vermilion Area
Zapata Off-Shore Company Self-elevating. 20′ x 80′ x 140′, with three triangular legs	"Scorpion"		At Galveston, waiting on location

Drilling Tenders

OWNER	NAME	WATER DEPTH	PRESENT STATUS
An-Son Offshore Drilling Co.	"Carl B. Anderson"		Commissioned Nov. 2 at Equitable Equipment Co.
The California Company Converted LST, 328' x 50'	S-21	41'	West Delta Area, Noble Drilling Co.
The California Company Converted LST, 328' x 50'	S-22		On stand by
The California Company Converted LST, 328' x 50'	S-23	45'	Bay Marchand, Louisiana, Noble Drilling Co.
The California Company LST, 328' x 50'	S-24		On standby
The California Company LST, 328' x 50'	S-25	39'	West Delta, Louisiana, Loffland Bros. rig
The California Company LST, 328' x 50'	S-26	23'	Main Pass, Louisiana, Loffland Bros. rig
Coastal-Marine Drilling and Construction Corp. New tender, 272' x 56'	Howard S. Cole Jr. Coastal-Mariner No. 1		Commissioned at Beaumont October 26
CATC Group New tender, 260' x 54'	"J. C. Craig"	50'	Drydock
CATC Group New tender, 260' x 54'	"Carle Sharp"	72'	Block 63, East Cameron Well B-3
CATC Group New tender, 260' x 54'	"Ernie Miller"	50'	Drydock
CATC Group New tender, 260' x 54'	"Jack Cleverley"		Block 44, West Delta, Well D-4
Deepwater Exploration Co. Converted LST, 328' x 50'	"Deepwater No. 1"		Block 174 Ship Shoal
Delta Marine Drilling Co. Converted LST, 326' x 50'	"Joseph Zeppa"	42'	Drilling for MCN, West Cameron Area
Gulf Oil Corporation New tender	"Dolphin"		Completed, placed in moth ball fleet at Orange, Tex., engines pickeled, and rig stacked
Gulf Oil Corporation Converted LST, 328' x 50'	"Eagle"	118'	Block 135, South Timbalier Area
Gulf Oil Corporation New tender, 272' x 60'	"Pelican"	130'	Block 131, South Timbalier Area
Humble Oil & Refining Co. Converted LST, 328' x 50'	ST-1	50'	Standing by
Humble Oil & Refining Co. Converted LST, 328' x 50'	ST-2	40'-50'	Eugene Island
Humble Oil & Refining Co. Converted LST, 328' x 50'	ST-3	60'-65'	South Timbalier
Humble Oil & Refining Co. Converted LST, 328' x 50'	ST-4	40'-50'	Standing by
Humble Oil & Refining Co. Converted LST, 328' x 50'	ST-5	40'-50'	At Orange, Texas for storage
Humble Oil & Refining Co. Converted LST, 328' x 50'	ST-6	40'-50'	Grand Isle Area
Humble Oil & Refining Co. Converted LST, 328' x 50'	ST-7	50'	Standing by
Humble Oil & Refining Co. Converted LST, 328' x 50'	ST-8	60'-65'	South Timbalier Area
Humble Oil & Refining Co. Converted LST, 328' x 50'	ST-9	40'-50'	Grand Isle Area
Humble Oil & Refining Co. Converted LST, 328' x 50'	ST-10	40'-50'	West Delta Area
Humble Oil & Refining Co. Converted LST, 328' x 50'	ST-11	40'-50'	Grand Isle Area
Humble Oil & Refining Co. Converted LST, 328' x 50'	ST-12	45'-60'	Standing by
Kerr-McGee Oil Ind., Inc. Converted YF, 260' x 48'	"Kermac I" Rig 16		Kerr-McGee Morgan City Base

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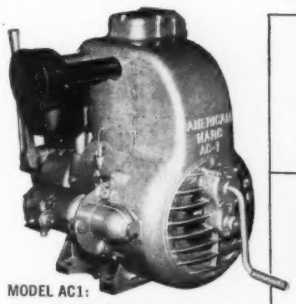

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OWNER	NAME	WATER DEPTH	PRESENT STATUS
Kerr-McGee Oil Ind., Inc. New Tender, 250' x 50'	"Kermac II" Rig 43		Waiting on new location
Kerr-McGee Oil Ind., Inc. New Tender, 250' x 50'	"Kermac III" Rig 48		Waiting on new location
Kerr-McGee Oil Ind., Inc. Converted YF, 260' x 48'	"Frank Phillips" Rig 39		Waiting on new location
Llano Drilling Company New tender, 260' x 54'	"Clayton G. Dorn"		In Drydock Orange, Tex.
Magnolia Petroleum Co. (Converted YF)	"Gulf Coast Barge No. 2"		West Cameron Area, Block 17; Well A-2, drilling, wildcat
MCN Group Converted YF	MDT-1	27'	Block 12, South Pelto Area Well "D-3," drilling
MCN Group Converted YF	MDT-2	52'	Well completed, rig removed
MCN Group Converted YF	MDT-3	32'	Block 113, Ship Shoal Area, Well G-2, Block 113 Field
MCN Group Converted YF	MDT-4	50'	Block 64, East Cameron Well A-4, drilling
MCN Group Converted YF	MDT-5	32'	Well completed, rig out of service
MCN Group Converted YF	MDT-6	35'	Block 120, Eugene Island, Well "D-2," drilling
MCN Group Converted YF	MDT-7	27'	Block 72, Ship Shoal Area, Well "6-1," drilling
Pan American Petroleum Corp. Converted LST, 328' x 50'	"Pan American 50"		Orange, Texas
Phillips Petroleum Company Converted YF, 260' x 48'	"K. S. Adams" Rig 40	24'	Bay Marchand, Block 5
Pure Oil Company Converted LST, 328' x 50'	"R. W. McIlvain"		Orange, Texas (Shipyard)
Reading & Bates Offshore Drilling Company	"J. W. Bates"	60'	Drilling for CATC, Block 72, East Cameron Area
Reading & Bates Offshore Drilling Company	"George M. Reading"	60'	Moving on location for Shell Oil Co. Block 175, Eugene Island Area
Sea Drilling Corp. (Converted LST)	"Seadrill I"		Contract cancelled
Southeastern Drilling Corp. Converted YF	Rig 12, Barge 9		Drilling for Union Oil of Calif., Block 67, Vermilion, Well A-3
Zapata Off-Shore Company Converted YF, 260' x 48'	"Nola No. 1"	16'	At Galveston, waiting on location

Self-Contained Platforms

COMPANY	DESCRIPTION	YEAR BUILT	LOCATION	WATER DEPTH
Arkansas Fuel Oil Corp.	54' x 145'	1956	Drilling equipment removed, wells S.T. 904, 905, 911 shut in	
CATC Group	106' x 220'	1955	Block 47 Grand Isle, La.	95'
CATC Group	110' x 146'	1956	Block 40 Grand Isle	82'
CATC Group	110' x 146'	1956	Block 45 West Delta	50'
CATC Group	110' x 146'	1956	Block 58 West Delta	49'
CATC Group	110' x 146'	1957	Block 47 Grand Isle	88'
CATC Group	110' x 146'	1957	Block 45 West Delta	50'
CATC Group	110' x 146'	1957	Block 48, Grand Isle	97'
Forest Oil Corp.			Block 4, E. Cameron, Gulf Marine Drilling Inc. (Power-Package rig)	
Gulf Oil Corporation	120' x 145'	1957	Block 154 Ship Shoal Area Salt Dome Production Co., contractor	61'
Gulf Oil Corporation	120' x 145'	1956	Block 154 Ship Shoal Area, Dixilyn Drilling Co., contractor	52'
Humble Oil & Refg. Co.	78' x 200'	1956	Block 18 Grand Isle	50'
Humble Oil & Refg. Co.		1958	Block 16 Grand Isle	
MCN Group	54' x 262'	1956	Block 126, Eugene Island Area, Well M-6, drilling	38'
MCN Group (Baker's Well Service, Inc. Contractor)	52' x 106'	1951	Rig Removed	32'
MCN Group (Southeastern Drilling, Contractor)	106' x 140'	1956	Block 128, Eugene Island 128 Field. Well C-3	50'
MCN Group (Zapata Off-Shore Co. contractor)	54' x 106'		Rig Removed	14'
MCN Group (Delta Drilling Co. contractor)	52' x 106'		Block 110, West Cameron Block 110 Field. Well "A-3", drilling	40'
Mecom Petroleums	82' x 193'	1948	Rig removed from platform	34'
Phillips Petroleum Co.	85' x 140'	1955	Block 184, Eugene Island Area, vacated, platform remains	84'
Phillips Petroleum Co.	88'9" x 140'	1955	Block 129-A, Eugene Island Area, La. Loffland Bros., contractor	52'
Phillips Petroleum Co.	88'9" x 140'	1956	Block 172, Eugene Island Area. Vacated platform	77'
Phillips Petroleum Co.	88'9" x 140'	1956	Block 191, Eugene Island. Company toools	81'
Phillips Petroleum Co.	88'9" x 140'	1957	Block 129, Eugene Island Area. Big Chief Drilling Co., contractor	57'
Pure Oil Company	52' x 106' with 51' x 82' pipe rack	1957	Block 126, East Cameron, Well A-3, Loffland rig	72'
Shell-Union	82' x 196'	1955	Block 116, Eugene Island Area Platform A. Shut down	48'
Shell-Union	82' x 196'	1956	Block 116, Eugene Island Platform "B". Shut down	50'
Sinclair Oil & Gas Co.	(L-shape)	1955	Block 175, Eugene Island Area, Rimrock Tidelands, contractor	87'
Sinclair Oil & Gas Co.	112' x 133'	1956	Block 86, South Timbalier Area, Rimrock Tidelands, contractor	92'
Sinclair Oil & Gas Co.	118' x 142'	1957	Block 175, Eugene Island Area.	85'
Sinclair Oil & Gas Co.	118' x 142'	1957	Block 190, Eugene Island Area. Rimrock Tidelands, contractor	72'
Sinclair Oil & Gas Co.	118' x 142'		In storage at McDermott Bayou Boef yard	
Sinclair Oil & Gas Co.	80' x 180'	1955	Block 15, South Timbalier. No rig in operation.	
The Superior Oil Co.	138' x 326'	1955	Block 71, West Cameron. Well B-6 (directional)	48'
The Superior Oil Co.	144' x 326'	1954	Block 71 Field, West Cameron. Well C-3 (directional) Block 101	43'

News from the
SHIPYARDS

First Two Wire Line Barges Delivered to Welex, Inc.

Two wire line service barges—the first designed and built specifically for marine oilfield service—have been delivered to Welex, Inc., of Fort Worth, Texas, by E. W. & A. P. Dupont, Inc., of Morgan City, Louisiana. The barges are the forerunners of a large fleet of modern wire line service barges that Welex will place in service in Lake Maracaibo, Venezuela.

Identical in design and construction, the two barges have a length overall of 110 ft., with a beam of 30 ft. and a depth of 6 ft. 6 in. Dupont completed the barges in less than 60 days from the time construction was begun.

Compartments . . . Below deck and between the rakes are four compartments divided by watertight bulkheads. One compartment contains two tanks—a fresh water tank of about 10,000 gallons capacity, and a diesel fuel oil tank of about 4000 gallons capacity.

Machinery . . . A second compartment contains the machinery, which consist of two 20-kw generators, switchboard, 10-cfm air compressors, 3-hp fire pump, ½ hp fresh water pressure set, and one 40-gallon electric water heater.

Two other compartments are used for storing gun tubes and explosives, and all of the compartments are ventilated with 1000-cfm explosion-proof blowers.

Special tubes for storing the radioactive gamma ray used in this operation are installed in the diesel fuel oil tank.

Quarters . . . A deckhouse aft provides sleeping accommodations for six, with shower, lavatory and toilet. There is a large day room, work room, instrument room, and an all-electric galley with refrigerator and deep freeze.

Equitable Equipment Builds All-Steel Diesel Tug Boat

Equitable Equipment Co., Inc. of New Orleans built a twin screw, all steel, all welded, diesel powered tub which was commissioned recently for Steuart Transportation Company.

On recent trial runs, the vessel far exceeded the expectations of both the owner and the builder.

Dimensions of the new Equity Standard tug are 64 ft. 9 in. overall length, 21 ft. 7 in. overall beam, 7 ft. 10 in. depth, and about 5 ft. 9 in. draft.

Botruc Oil Rig Tender Built For George Engine

Another Botruc oil rig tender has been delivered for service with the Gulf Coast offshore oil industry.

Built by Blount Marine Corporation of Warren, R. I., for George Engine Company of Harvey, Louisiana, the 64½ ft. all-welded steel, twin-screw, diesel vessel will be operated by Cheramie Bros. of Golden Meadow, Louisiana. Cheramie is the operator of several Botrucs, which were designed specifically for hauling men, materials, and supplies to offshore drilling rigs.

The vessel's chief feature is its long, unobstructed after cargo deck which is built to handle a normal pay load of 65 tons. The deck is 45 ft. long, 22 ft. wide, and enclosed by removable bulwarks for easy side and stern loading.

The cargo deck, heavily reinforced to take concentrated loads of up to 700 pounds per square foot, also has a center lane for carrying vehicles.

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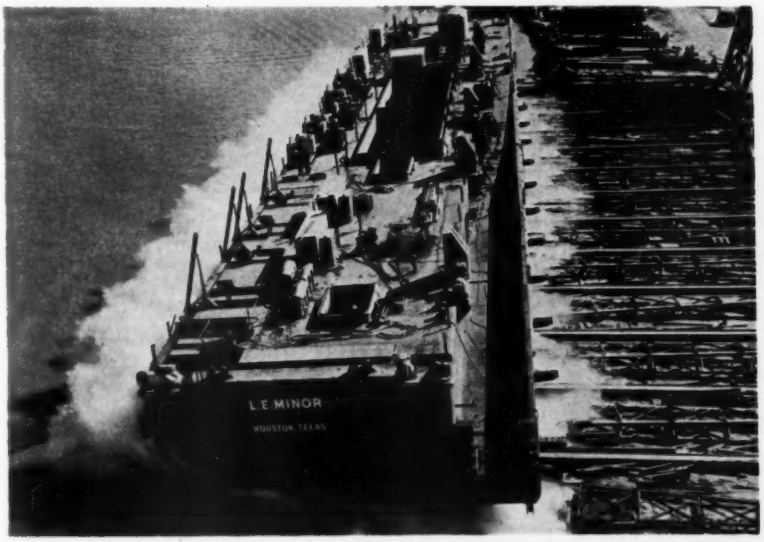


Unusual versatility is incorporated into the design of this new deep-sea pipe laying barge built by Levingston Shipbuilding Company in Orange, Texas, for Brown & Root, Inc. of Houston. The barge can be used not only for laying pipe, but also for pile driving, setting offshore structures, laying marine cables, and other marine work.

Shipyard

(*Continued from preceding page*)

Normal operating crew is two men, but the vessel has living accommodations for six, complete with toilet, shower, galley, dinette and bunks. There is also seating space for 12 forward under the wheelhouse.

All exposed interior surfaces are insulated by fiber glass, and the floors are rubber tile.

The vessel is built from plans complying with U. S. Public Law 519, (U.S.C.G.) and has a beam of 23 ft., hull depth of 7½ ft., draft light of 4 ft. 8 in., and freeboard light of 3½ ft. Deck side and bottom plates are 5/16-in. steel, frames are 3-in. by 5-in. angles, and heavy longitudinal of 10-in. girders and ¼-in. bulkheads.

Two GM-110 series engines with 3:1 reduction gear, installed by George Engine; drives 42-in. propellors, which were manufactured by Danforth Anchor Company, Berkley, California. Top speed is about 13 knots.

Fuel capacity of the vessel is 6000 gallons, and the cruising range is about 3000 miles.

Reagan Equipment Company Installs Engines In Tug

Reagan Equipment Co., Waukesha Engine suppliers for the Gulf Coast, has completely outfitted the tug **Ethel McDermott** with Waukesha Model LRDBSM main engines, replacing the original 275 hp engines.

The new engines develop 600 bhp and 2750-ft. lbs. of torque each at 1200 rpm. They drive two three-bladed 64 in. x 46 in. wheels through a Western Model 180-3.5:1 reduction gear.

The J. Ray McDermott company tug also received two new Waukesha Model 135 DKM diesel engines driving 40 kw, 1200 rpm Electric Machinery Synchronous Generators.

Bludworth Begins Building Crewboat For Tellepsen

Bludworth Shipyard, Inc. of Houston has constructed a twenty-passenger crew boat for use in Lake Maracaibo, Venezuela by Tellepsen Construction Company of Houston.

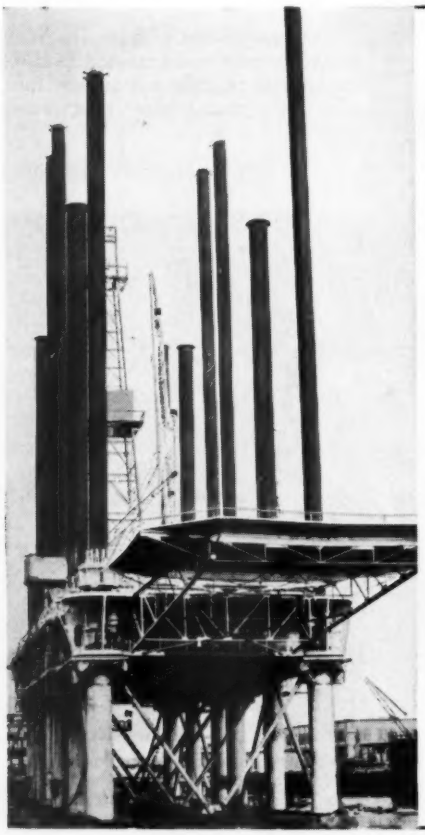
The boat is designed to make twenty-five miles per hour with twenty men and the pilot aboard. Its overall length is 42 ft., with a beam of 12 ft. 3 in., and a draft of 2 ft. 6 in. The deck, side shell, and bottom is ⅛ in. plate. All of the exposed steelwork was metalized by F. W. Gartner Company of Houston with zinc and painted with Metco system No. 107.

The house, engine boxes, and all floor plate is made of aluminum and the house is of welded construction. Port lights in the lower house are aluminum.

Stewart and Stevenson Distributing Company of Houston furnished two aluminum block 6-71 diesel engines with gear reduction of 1.5 to 1. Both main engines are started with Hydrostarters.

The wheels are Federal Equipoise 22 in. x 26 in., and tail shafting and rudder stocks are 1½ in. monel. The rudder blades are stainless steel welded to monel stocks.

A 1 in. Jabsco bilge pump operates off the starboard main engine and a Quincy air compressor operates off the port main engine. The air horn is a Cunningham 2 AS and the searchlight is a 10 in. incandescent.



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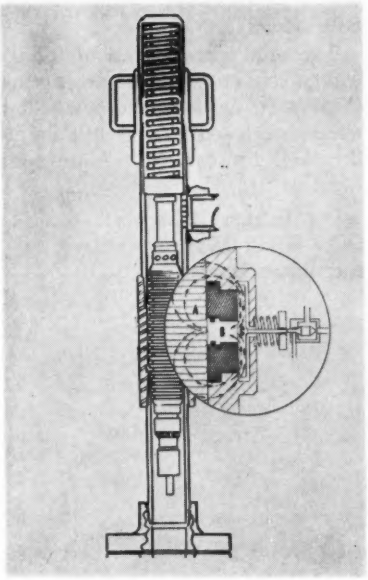


Magnetic Ball Check Valve Highly Corrosion Resistant

A new and unique magnetic ball check valve designed to replace other types of check valves in gas lift equipment has been announced by Harold Brown Company of Houston.

It is the first ball check valve, Mr. Brown said, that can be used in the conventional position in the total valve assembly without the possibility of failure of the check valve. Valve failure would result in backwash and erosion damage to the well casing.

The conventional position is that in which the ball or "drop" seals against the seat above the ball, and the company's standard gas lift valves have been designed to be used "upside down" so that a gravity ball check valve could be employed.

The new valve is made from nickel alloys, the ball is produced from titanium carbide with a nickel binder, and the cage is of monel metal. Permanent magnets are inset inside the walls of the cage and pull the ball to rest at the upper edges of the cage.

For further information write Harold Brown Company, 2619 Milford, Houston, Texas.

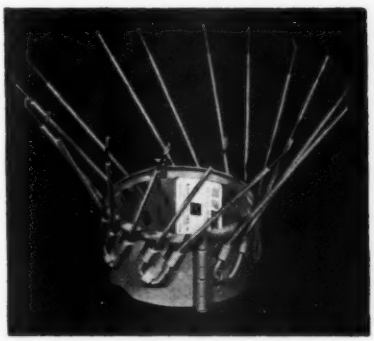
Byron Jackson Announces Scratcher For Cementing

The new BJ Red Top scratcher for cementing operations, featuring special coil spring steel fingers enclosing wire scratching elements that resist kinks and bounce back into position, has been announced by Garth Nicolson, vice-president and general manager of Byron Jackson Tools, Inc.

A sheaf of 10 steel wires held fast in a tightly coiled spring form the new kind of scratching fingers. The protruding wires do the actual scratching, and the coils spring them back to their original position after each stroke. The coiled springs also prevent damage to the scratching fingers before and during insertion into the hole.

A slight dogleg near the tips of the wire keeps them from disturbing the mud cake on the way down.

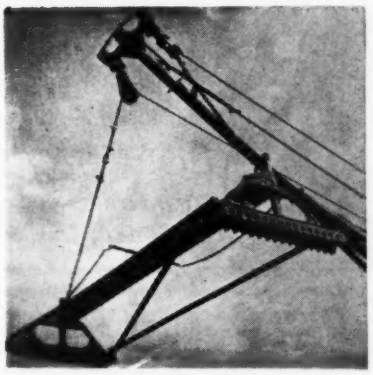
Every model features strong hinged clamp-around design, and they are manufactured in sizes to fit all API casing OD's from 4½" to 12⅜".



"With the recently introduced BJ Red Top centralizer," Garth Nicolson points out, "we feel that we can offer the petroleum industry positive results in any cementing operation."

BJ scratchers and centralizers are sold through all oil field supply stores as well as by sales and service field stations of Byron Jackson Tools, Inc., and BJ Service, Inc.

For further information write Byron Jackson, Inc., P. O. Box 2017 A, Terminal Annex, Los Angeles 54, California.



Leo Reel-Protolift Makes Pipe Handling Equipment

New pipe and tube handling equipment produced in 5 to 31 joint units to accommodate all sizes of pipe transfers over 1300 joints per hour from barge to rail car with one operator and two helpers.

Protolift was designed to minimize fatigue and decrease the accident rate and increase the volume of production. All of the units are constructed with a safety factor of five standard pipe weight and they eliminate damage to pipe from bending, springing, and egg shaping of ends as is often the result of conventional pipe handling methods.

The new device will not damage coated pipe, and the number of units which can be lifted is limited mainly by the lifting power available.

For further information write Leo Reel-Protolift Co., West Building, Houston, Texas.

Dryex Adsorption Unit Gets Good Test Results

A "Dryex" adsorption unit of Delta Tank Manufacturing Co., Inc., which was engineered to recover an average of 40 barrels of raw gasoline a day from a natural gas stream actually recovered an average of 49 barrels per day.

The test was conducted on a Model 36 "Dryex" unit installed at a Texas Gas Corporation lease near Vidor, Texas.

Operating costs were about 15 cents per barrel of raw gasoline recovered, Delta officials said. The

(Continued on next page)

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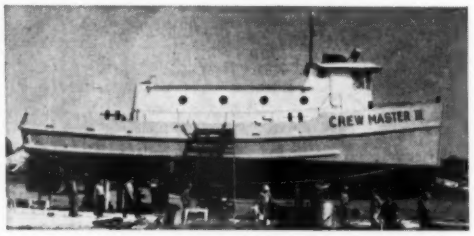

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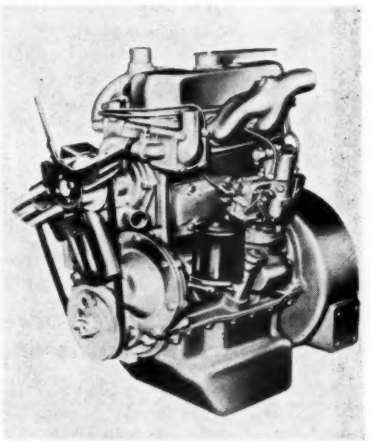
(Continued from preceding page)

unit recovers about 85 per cent of a commercially valuable liquid contained in the natural gas streams, they added.

The unit processed about 8,500,000 cubic feet of gas per day during the latest "Dryex" field test. Flow temperature was 90 degrees Fahrenheit and operating pressure was rated at 575 psi.

For further information write Delta Tank Manufacturing Co., Inc. Baton Rouge, Louisiana.



Hercules Motors Making New Series Of Engines

Hercules Motors Corporation of Canton, Ohio, is now manufacturing a new series of three-cylinder gasoline and diesel engines utilizing a new straight line assembly set-up.

The new series of six models expands to 18 the number of engines characterized by maximum interchangeability which can be produced on Hercules Motors new assembly line.

There are two series of the new engines, the "G.O." series, which are overhead valve gasoline engines, and the D.D. series, which are direct injection diesels. The new 3-cycle, light-weight, high-speed, heavy-duty engines offer extreme interchangeability of parts. This planned program of interchangeability is carried out in many common parts and components extending over the entire range of models.

For further information write Hercules Motor Corporation, 101 Eleventh St., S. E., Canton, Ohio.

Safford Appointed To Staff Of Hardy-Griffin Engineering

Newly appointed general manager and sales manager for Hardy-Griffin Engineering Corporation is Joe Safford.

Safford

Safford returns to Hardy-Griffin, division of Atlas Pipe, Inc., following a year's absence during which time he was employed by Mannesmann Tube Co., Ltd., of Sault Ste Marie, Ontario, Canada, as a sales engineer.

Previously he had served four years as a sales engineer with Atlas Pipe in Houston where he specialized in high pressure and high temperature oil and gas well tubing. Prior to joining Atlas he was affiliated with the Hydril Company as a sales and service engineer.

In 1950, he graduated from the University of Oklahoma with a degree in industrial engineering. During summer vacation he had worked in the research laboratory for Stanolind Oil & Gas Company at Tulsa.

Hamblin

Flemmons

Two New Managers Selected By Cardwell Manufacturing

Charles C. Hamblin has been appointed advertising manager for the Cardwell Manufacturing Company, Wichita, Kansas, Paul Courtney, general manager, announced.

Jim Flemmons has become manager of the Cardwell store at Oklahoma City, Clyde Lackey, domestic sales manager announced.

Hamblin served on the sales staff of the International Harvester Company before he joined Cardwell. He majored in engineering at the University of St. Louis.

Flemmons was a member of the sales staff for Republic Supply before his appointment by Cardwell. His home will be Edmond, Okla., and he will expend a great deal of his time in the field investigating needs of operators.

O. G. Garner (inset) has been named manager of a new store opened at Lake Maracaibo, Venezuela, by Mid-Continent Supply Company. The company's other Venezuelan store, under the direction of J. W. Davis was opened at Anaco in 1956. Other new branch has been opened at Estevan, Saskatchewan. Both new stores carry complete lines of oilfield equipment.

Ideco Appointed Sales Agent For Division of Graver Tank

Ideco, Inc., one of the Dresser Industries, has been named exclusive export sales representative for the oil and gas equipment division of Graver Tank Manufacturing Company.

Announcement was made jointly by Geo. W. Walton, president of Ideco, and J. E. Fogarty, vice president and general manager of the mid-continent division of Graver.

Ideco, a leading manufacturer of drilling equipment, has its plant at Beaumont, Texas, while Graver produces its line of oil field equipment at Sand Springs, Okla.

Graver products include lease storage tanks, oil and gas separators, heaters, treaters, cold separation units, and glycol dehydrators.

Houston Insurance Counselors Announce Three Appointments

Langham, Langston, & Burnett, insurance counselors of Houston, have announced the appointment of J. E. Pike as an associate and director of the Marine and Lloyd's departments. Pike has headed the marine department for the last ten years.

Pike

In other personnel promotions, B. Wendell Phillips and William B. Abbott have been elected managing partners of the firm. Announcement came from A. D. Langham, senior partner.

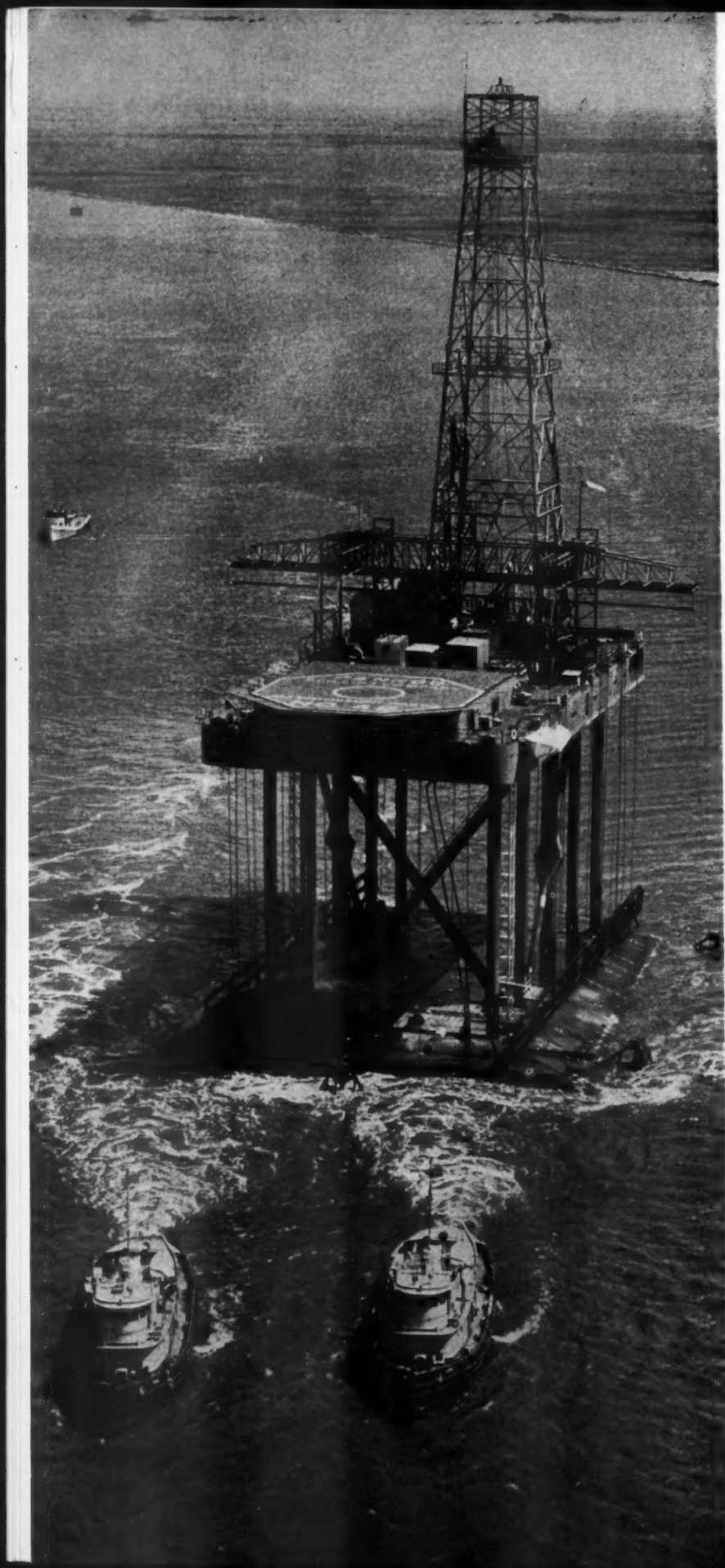
Established in 1913, Langham, Langston & Burnett is headed by A. D. Langham, A. C. Burnett, A. E. Wagenhauser, Val S. Dawson, Chas. L. Hawkins, B. W. Phillips, R. B. Hagens, and Wm. B. Abbott.

Louderback Heads Roster Of Weatherford Selections

In a series of promotions by Weatherford Oil Tool Company, Inc. of Houston, Homer Longino has been named vice president in charge of sales.

Assistant vice president in charge of sales is Bill Louderback, former

(Continued on page 80)



A Firsthand look at . . .

Today's O

By Capt. JOHN G. LEECH
Vice-President and
Director of Marine Operations
G & H Towing Company

Growth of marine oil operations during the past several years has influenced significant changes in the equipment, personnel training, safety, and operational procedures of major towing companies along the Gulf Coast.

This growing emphasis on improvement of all phases of operations was prompted by necessity for more powerful and dependable equipment and better trained personnel for the movement of multi-million dollar offshore mobile drilling platforms off the coasts of Louisiana and Texas and for tows to Central and South America with heavy drilling and marine equipment for the expanding offshore operations there.

Improved service to customers has been the natural result of this trend,

Penrod Drilling Company's submersible mobile unit JIM WOODRUFF, being towed by G & H tugs PIKE and LING, is typical of towing jobs for the marine oil industry that have influenced changes in operations and equipment in offshore towing companies.

Towing massive marine drill barges like Kermac's RIG 46, shown under tow by 1700-hp G & H tugs GRAMPUS and PIKE, is "like towing a brick wall," according to crewmen.

Offshore Towing

and within our own company it has created a much greater internal operating efficiency.

With nearly 40 years in the towing business, G & H embarked two years ago on an expansion program that included improvement of equipment, personnel, safety, and maintenance.

Equipment . . . Our recently completed construction program added nine new tugboats to give G & H an up-to-date 31-tug fleet.

Stability of towing vessels is of greater significance in the rough water often encountered in open Gulf towing. In many cases, a particular towing job requires the weight, draft, and power of tugs like our 1700-hp **Grampus, Pike, Ling,** and **Sturgeon** with their 15-ft. draft, 105-ft. length, and 27-ft. beam.

As the search for undersea oil moves to deeper water, the requirement will increase for this type of towing equipment and for adequately trained crews to man them.

Training . . . Our program of training for deck and engineering officers has produced 15 licensed masters and 12 licensed chief engineers since April of 1956.

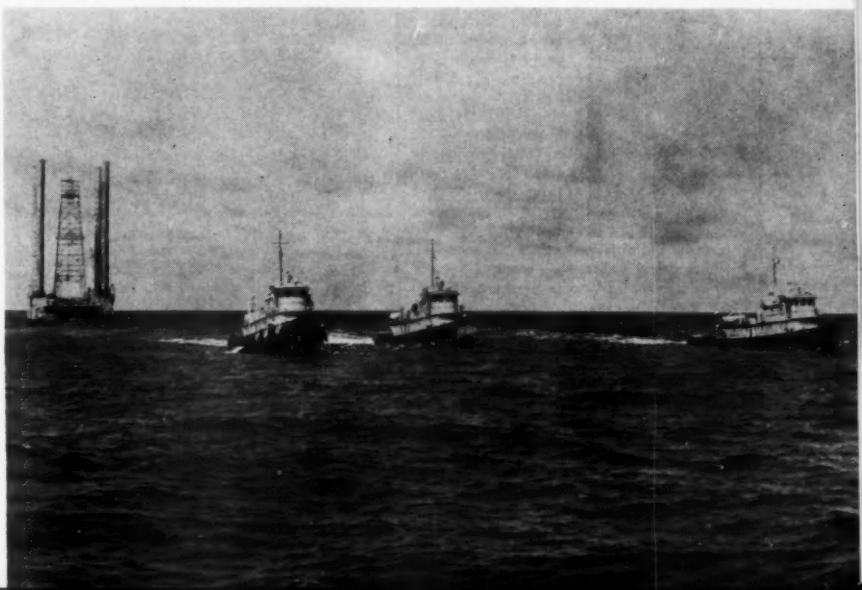
To assist our seamen in obtaining their able-bodied seaman's "ticket," we recently instituted a program to provide necessary equipment and facilities for such training.

Training of deck personnel is administered by Capt. R. M. Brower, director of personnel and safety, and engineering training is directed by Commander Roy Van Benthyysen, USCG (Ret).

These highly flexible programs are tailored to serve the needs of individual men of varied personal and educational backgrounds. Strictly voluntary, the programs include about 120 hours of "book work" in addition to the practical

(Continued on next page)

MR. GUS, C. G. Glasscock Drilling Company's 9000-ton self-elevating mobile unit, is towed to location by the JUNO, LING, and MARLIN. The three G & H tugs have a total of 4600 hp. MR. GUS II recently drilled in a record 136 feet of water.



DELTA V, drilling tender built for Perforaciones Delta by Marine Fabricating and Engineering Company, embarks for Lake Maracaibo under tow by a G & H tug. Clyde Iron Works anchor winches can be seen astern. Deck cargo is crewboats powered by George Engine Co.

Offshore Towing

(Continued from preceding page)

experience of duty aboard our tugs.

Remarkably successful, these programs have not only provided us with crews of maximum professional efficiency, but also have given us a marked reduction in personnel turnover.

From the employees' view, it provides them with the best training and experience obtainable and with the most modern towing equipment afloat for "laboratory" equipment.

Through our port steward, we have a training program to assist our sea-going chefs in preparing better meals from well-planned menus. The program was instituted initially with close control over a test using one-third of our fleet as a sample proved that the program resulted in the "trained" chefs serving not only the highest quality food in better planned menus, but also in their crews having the most palatable meals afloat.

Safety . . . Our annual safety award banquet highlights our outstanding safety program that is sponsored by G & H and implemented by our crews. This program benefits much from many good suggestions from crewmen.

The program has resulted in a marked decrease in lost-time accidents, despite the increased exposure resulting from foreign tows and offshore work.

Maintenance . . . Our aim is to have all our boats ready at any time to do any job anywhere. To insure such constant readiness, we have established a standardization of procedure to provide uniform maintenance.

Before and after each tow, our safety and engineering departments and the boat crew concerned inspect all towing equipment. In addition to this, we have a regular monthly inspection of all equipment.

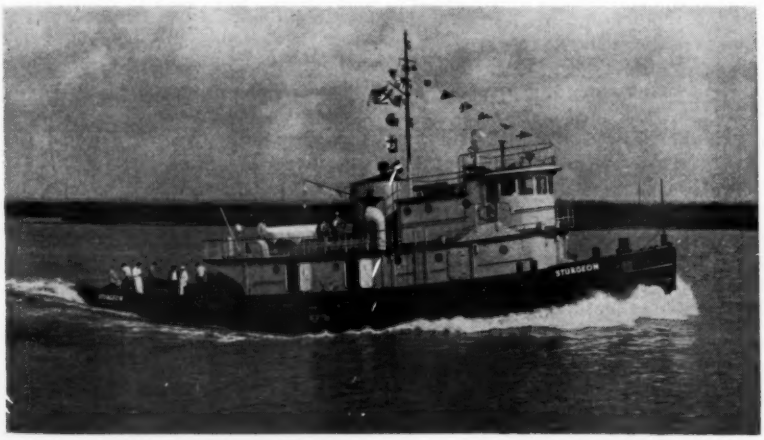
Each of our boats is drydocked once each year. This means we have a boat going to drydock about every 11 days.

Our maintenance and warehousing, under direction of W. J. Schreiber, our marine superintendent, is indicative of the belief within the towing business that improved service to our customers is dependent on well trained crews having the best of equipment that is constantly maintained in the best possible condition.

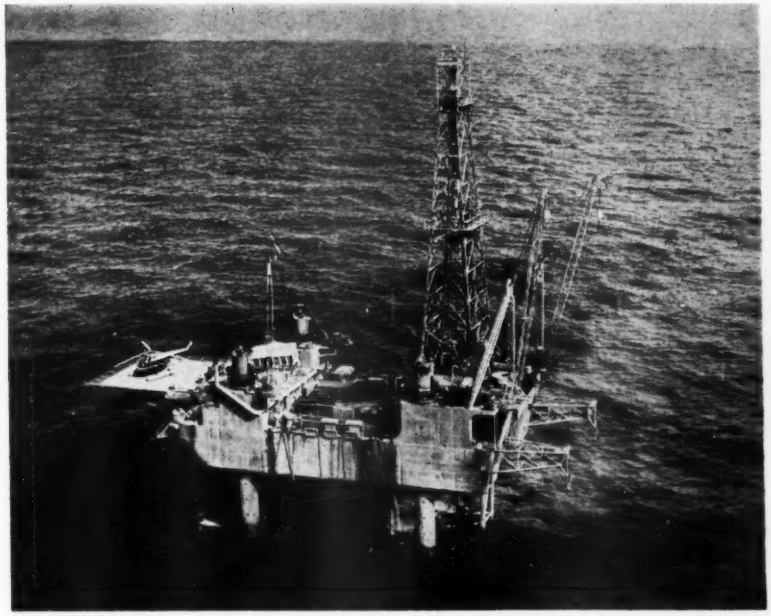
As marine oil operations continue to expand throughout the world, the demands for bigger and better towing equipment and service will increase, and indications are that the major towing companies will continue to provide increasingly better boats and crews for offshore service.

Capt. John G. Leech, holder of an Unlimited Master's license, traces his sea-going ancestry back some 400 years to the master mariners of Ireland. A seaman since 1925, Capt. Leech served as master of many ships of the wartime fleet for five years during World War II.

A strong believer in the experience and training factors for the greatest safety and quality of service in offshore towing, Capt. Leech has been with G & H since 1945 and has helped formulate the recent expansion and training programs within the company. He has handled arrangements for many of the "firsts" in marine oil tows.



Recently completed by Gulfport Shipbuilding Company, the 1700-hp STURGEON completed the current construction program of G & H. This 105-ft. "super?tug" has a 15-ft. draft and a 27-ft. beam. The 31-tug fleet of G & H includes six of this 1700-hp class.



MR. GUS II, holder of the water depth record for a mobile platform, increases its prestige with a discovery completed in three zones off Grand Isle, La. The C. G. Glasscock rig with a 177-foot-high platform is the most powerful mobile unit with 6000 hp for drilling equipment.

Wildcat in deepest water

Triple Discovery for CATC

In 137-Foot Water Off Grand Isle MR. GUS II Finals A Test That Produces Oil From Three Sands

A wildcat drilled in a record 137 feet of water by the $6.5 million mobile unit **Mr. Gus II** has been completed as a triple oil discovery.

Continental Oil Company, operator for the CATC Group drilled the three-zone-discovery to a total depth of 13,495 feet 23 miles off the coast from Grand Isle, La. It is the No. 1 well in Block 70 of the Grand Isle area with the nearest production being in Block 43, 2½ miles north of the drill site.

Perforations at the intervals of 8,356-372 feet produced 253 barrels of 32-gravity oil on an 8/64-inch choke.

A second set of perforations at 8414-422 feet flowed 190 barrels of 28.1-gravity oil daily through an 8/64-inch choke.

Bottom set of perforations yielded 75 percent oil and 24 percent water on a 12/64-inch choke from the intervals of 9240-254 feet.

CATC Group made up of Conoco, Atlantic Refining Company, Tidewater Oil Company, and Cities Service Production Company holds drilling rights on 28,000 acres in the area.

Mr. Gus II, owned and operated by C. G. Glasscock Drilling Company of Corpus Christi, Texas, is a 9000-ton unit designed to drill in water up to 150 feet in the calm season.

Previous water depth record was held by Penrod Drilling Company drilling for Gulf Oil Corporation in 120 feet of water in South Timbalier Block 135.

Calco Finals Oil Discovery In Vermilion Block 164 Field

The California Company has completed a wildcat in Block 164 off Vermilion Parish, La., for a new oil discovery.

The operator drilled its No. B-1 OCS-0492 test well to a total depth of 7583 feet and then sidetracked the hole, plugging back to 6154 feet. When the test was perforated at the intervals of 6108-46 feet, it gauged an initial flow of 210 barrels of 42-gravity pipeline oil plus 133,000 cubic feet of gas per day.

EXPLORATION

Signal Gets Second Strike In Lake Maracaibo Block 4

A second wildcat completed in Maracaibo's Block 4 by Signal Oil and Gas Company of Venezuela has yielded 4,040 barrels of oil per day.

Signal is operator for a combine consisting of foreign subsidiaries of Signal Oil and Gas Company, The Pure Oil Company, Standard Oil Company of Ohio, and Hancock Oil Company.

Discovery, the Centro 3X was completed on a 28,000-acre concession which the group holds in the prolific Lake Maracaibo waters. It was perforated in additional sections of the same zone as the Centro 2X which registered a 70-foot thick oil sand between 12,113 feet and 12,183 feet. Gravity of crude in the Centro 3X is 41.3 degrees.

Signal's latest producer lies about three quarters of a mile northwest of the Centro 2X. Signal's first effort in the block, the Centro 1X, was drilled to 9,470 feet and abandoned as a duster.

Operator now has an exploratory rig and a development rig at work on the lease.

Other major strikes this year in the central part of the lake are Superior Oil Company's Lama No. 2, which flowed at a daily rate of 7000 barrels, and Sun Oil Company's SVS-4 in Block 1, also yielding about 7000 barrels of oil per day.

Sinclair Extends Two Fields With Gulf Of Mexico Oilers

A fourth producer has been completed from a self-contained platform in 87 feet of water in the Gulf of Mexico for a combine for which Sinclair Oil & Gas Company is operator.

Well No. A-6, located on federal lease Block 175 in the Eugene Island area 40 miles off the Louisiana coast, has also extended the field.

Four companies hold one fourth interest each in the project: Sohio Petroleum Company, Peoples Production Company, El Paso Natural Gas Company, and Sinclair.

Perforated in the Miocene at the intervals of 11,838 to 11,846 feet, the field extender made 356 barrels of 32.2-gravity oil per day through

(Continued on next page)

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(Continued from preceding page)

a ⅛-inch choke. It measured a gas-oil ratio of 680-1.

The operator was preparing to drill a southwest offset to the discovery well from the same platform. Three other platforms are being operated by the group on its 10,000-acre federal lease block.

Meanwhile in the South Timbalier area the same group hit with a fourth producer from a platform in Block 86.

Aramco Announces Oil Shows In New Zone At Manifa No. 1

Arabian American Oil Company has struck promising oil zones between 7,600 and 8,300 feet in its Persian Gulf test Manifa No. 1.

Drill stem test revealed that oil might exist in commercial quantities between the Arab and Zubair zones. Operator released no figures on flow tests, but it admits that the Arab Zones A, B, and C are all productive in the wildcat. The latest zone tested has been hit nowhere else in the Persian Gulf.

Since oil shows were discovered at the offshore location—lying 120 miles northwest of Dharan—in December, drillers have been testing.

Although the D member of the Arab Zone is the major oil producer at Aramco's onshore Abqaiq and Ghawar fields, it has failed to yield at Manifa.

Aramco plans to drill additional wells in the area and carry out further tests in order to fully determine the potential of its findings there.

New Gas-Condensate Zone Opened In West Delta Block

Continental Oil Company has opened a new gas-condensate zone in Block 58 Field of the West Delta area off Plaquemines Parish.

As the field's second producer, the No. A-3 OCS-0146 (State Lease 983) well is productive in a deeper zone.

Perforations at the interval of 14,182-200 feet flowed 4,400,000 cubic feet of gas and 540 barrels of 43.5-gravity condensate per day through a $^{12}/_{64}$-inch choke. It was drilled to a total depth of 15,225 feet. A tubing pressure of 8250 pounds was recorded.

Discovery well for the field was the No. A-1 productive from perforations at 11,668-678 feet. A second effort was abandoned at 13,578 feet after drillers failed to procure commercial shows.

OFFSHORE LOCATIONS

LOUISIANA

Cameron Parish

Continental Oil Company B-3 (OCS 0160) State Lease 1201, East Cameron Block 64. Block 63, East Cameron Area. Proposed depth 10,400 feet.

Coral Drilling Company, Inc. 1 (OCS 0266) State Lease 1378, East Cameron Block 4. Block 10, East Cameron Area. Proposed depth 15,000 feet.

John W. Mecom 5 (OCS 0300) State Lease 1134, West Cameron Block 9. Block 9, West Cameron Area. Proposed depth 14,000 feet.

Mecom Petroleum Company 5 (OCS 0300) State Lease 1134, West Cameron Block 45. Block 45, West Cameron Area. Proposed depth 11,500 feet.

Ocean Drilling & Exploration Company 1 (OCS 9258) State Lease 1382, West Cameron Block 66. Wildcat. Block 66, West Cameron Area. Proposed depth 12,000 feet.

Shell Oil Company A-1 (OCS 0406), West Cameron Block 192. Block 82, East Cameron Area. Proposed depth 10,450 feet.

Jefferson Parish

Continental Oil Company E-2 (OCS 0133) State Lease 953, Grand Isle Block 47. Block 47, Grand Isle Area. Proposed depth 10,500 feet.

Humble Oil & Refining Company P-3 (OCS 031) State Lease 803, Grand Isle Block 16. Block 22, Grand Isle Area. Proposed depth 13,500 feet.

La Fourche Parish

The California Company 20 State Lease 1365, Bay Marchand Block 2. From USC&GS Station "Pass 2" go S 86 deg 46 min 30 sec E 8934.7 feet. Proposed depth 5850 feet.

3 State Lease 1482, Bay Marchand Block 2. From USC&GS Station "Pass 2" go N 60 deg 54 min 10 sec E 13,487.8 feet. Proposed depth 9500 feet.

S-4 (OCS 0386) State Lease 1024, Bay Marchand Block 2. Block 23, Bay Marchant Area. Proposed depth 8900 feet.

1 (OCS 0599) South Timbalier Block 63. Wildcat. Block 63, South Timbalier Area. Proposed depth 5570 feet.

Gulf Oil Corporation 5 State Lease 192, Timbalier Bay. From USC&GS Tri Station "East 2" go S 61 deg 51 min 55 sec E (true) 6948.3 feet. Proposed depth 7000 feet.

1 (OCS 0263) State Lease 1423, South Timbalier Block 21. Block 21, South Timbalier Area. Proposed depth 13,000 feet.

2 State Lease 1483, Timbalier Bay. From USC&GS Tri Sta "East 2" go S 14 deg 49 min 41 sec W (true) 4971.4 feet. Proposed depth 9500 feet.

C-1 (OCS 0462) South Timbalier Block 135. Block 135, South Timbalier Area. Proposed depth 9500 feet.

Plaquemines Parish

The California Company 3 (OCS 0374) State Lease 1263, Main Pass Block 41. Block 41, Main Pass Area. Proposed depth 7500 feet.

17 State Lease 1924, South Pass Block 24. From USC&GS "Scotts Canal Light" go S 50 deg 45 min 30 sec W 6838.6 feet. Proposed depth 8810 feet.

C-9 (OCS 0385) State Lease 1069, West Delta Block 30. Block 29, West Delta Area. Proposed depth 6500 feet.

CA-2 (OCS 0385) State Lease 1069, West Delta Block 30. Block 29, West Delta Area. Proposed depth 11,600 feet.

F-5 (OCS 0385) State Lease 1069, West Delta Block 301. Block 29, West Delta Area. Proposed depth 8700 feet.

F-6 (OCS 0385) State Lease 1069, West Delta Block 30.

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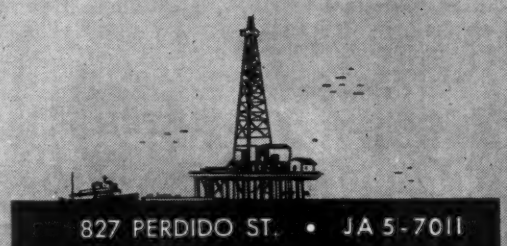

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Block 29, West Delta Area. Proposed depth 7500 feet.
3 Calco-Shell-State Lease 1922, West Delta Block 83. From USC&GS Station "SW. Pass Lite-house" go N 41 deg 28 min 50 sec E (Grid) 9630 feet. Proposed depth 10,100 feet.

Continental Oil Company C-8 (OCS 0138) State Lease 970, West Delta Block 30. Block 45, West Delta Area. Proposed depth 14,000 feet.

Gulf Oil Corporation 2 State Lease "QQ" 195, Main Pass Block 47. From USC&GS Station "Sable-1921" go S 38 deg 58 min 56 sec E (true) 18,957 feet. Proposed depth 10,000 feet.

A-2 State Lease 2716, South Pass Block 20. Block 20, South Pass Area. Proposed depth not given.

Hassie Hunt Trs., et al 5 State Lease 2484, South Pass Block 24. From USC&GS Station "Scotts Canal Lite-1934" go N 12 deg 55 min 10 sec W (true) 9449.4 feet. Proposed depth 9600 feet.

D-14 State Lease 2484-B.L.D. South Pass Block 24. From USC&GS Station "Scotts Canal Lite-1934" go N 07 deg 04 min 01 sec E (true) 7677.7 feet. Proposed depth 9600 feet.

D-15 State Lease 2484-B.L.D. South Pass Block 24. From USC&GS Station "Scotts Canal Lite-1934" go N 2 deg 40 min 01 sec E (true) 8616.9 feet. Proposed depth 9600 feet.

Humble Oil & Refining Co. R-1 (OCS 016) State Lease 820, West Delta Block 30. Block 31, West Delta Area. Proposed depth 10,000 feet.

J-7 (OCS 026) State Lease 819, West Delta Block 30. Block 30, West Delta Area. Proposed depth 8500 feet.

Shell Oil Company 22 State Lease 1357, Main Pass Block 69. Block 81, Main Pass Area. Proposed depth 8150 feet.

23 State Lease 1357, Main Pass Block 69. Block 81, Main Pass Area. Proposed depth 8150 feet.

24 State Lease 1357, Main Pass Block 69. Block 81, Main Pass Area. Proposed depth 8250 feet.

A-1 Shell-Calco-State Lease 2673, South Pass Block 21. Block 14, South Pass Area. Proposed depth 11,000 feet.

C-15 St-O'Brien Unit, South Pass Block 24. Block 24, South Pass Area. Proposed depth 8910 feet.

B-18 (OCS 0350) State Lease 1008, South Pass Block 27. Block 24, South Pass Area. Proposed depth not given.

B-22 (OCS 0347) State Lease 1007, South Pass Block 27. Block 23, South Pass Area. Proposed depth 6600 feet.

B-21 (OCS 0349) State Lease 1007, South Pass Block 27. Block 23, South Pass Area. Proposed depth 6950 feet.

18 (OCS 0352) State Lease 1011, South Pass Block 27. Block 27, South Pass Area. Proposed depth 8000 feet.

19 (OCS 0352) State Lease 1011, South Pass Block 27. Block 27, South Pass Area. Proposed depth 7950 feet.

20 (OCS 0352) State Lease 1011, South Pass Block 27. Block 27, South Pass Area. Proposed depth 7950 feet.

18 (OCS 0353) State Lease 1012, South Pass Block 27. Block 28, South Pass Area. Proposed depth 8500 feet.

19 (OCS 0353) State Lease 1012, South Pass Block 27. Block 28, South Pass Area. Proposed depth 9200 feet.

20 (OCS 0353) State Lease 1012, South Pass Block 27. Block 28, South Pass Area. Proposed depth not given.

21 (OCS 0353) State Lease 1012, South Pass Block 27. Block 28, South Pass Area. Proposed depth not given.

St. Mary Parish

Placid Oil Company 1 (OCS 0477) Eugene Island Block 210. Wildcat. Block 210, Eugene Island Area. Miocene test.

The Pure Oil Company 4 (OCS 0197) State Lease 833,

Eugene Island Block 32. Block 32, Eugene Island Area. Proposed depth 11,000 feet.

The Shell Oil Company A-1 (OCS 0445) Eugene Island Block 175. Block 176, Eugene Island Area. Proposed depth 13,000 feet.

Terrebonne Parish

Anderson-Pritchard, et al A-1 (OCS 0490) Ship Shoal Block 174. Wildcat. Block 174, Ship Shoal Area. Proposed depth 14,000 feet.

Gulf Oil Corp. C-23 (OCS 0455) Ship Shoal Block 154. Block 154, Ship Shoal Area. Proposed depth 10,000 feet.

Kerr-McGee Oil Industries, Inc. G-1 (OCS 0346) State Lease 750, Ship Shoal, Block 28. Block 28, Ship Shoal Area. Proposed depth 14,200 feet.

Placid Oil-Pan American Pet Corp. 4 State Lease 2857, Caillou Island. From USC&GS Tri Station "Caillou-1928" go S 68 deg 12 min 30 sec W 13,981.06 feet. Proposed depth 16,000 feet.

Shell Oil Company 3 (OCS 0587) Ship Shoal Block 139. Block 139, Ship Shoal Area. Proposed depth 12,000 feet.

Union Oil Calif.-LL&E 12 State Lease 2826, Caillou Island. From USC&GS "King 2-1934" go N 60 deg 58 min 42 sec E 15,362.10 feet. Proposed depth 13,750 feet. 13 State Lease 2826, Caillou Island. From USC&GS "King 2-A 2-1934" go N 81 deg 32 min 45 sec E 16,293.47 feet. Proposed depth 12,200 feet.

Vermilion Parish

Continental Oil Company A-5 (OCS-0496) Vermilion Block 120. Block 120, Vermilion Area Proposed depth 10,600 feet.

Pure Oil Company 1 (OCS 024) State Lease 878, Vermilion Block 39. Block 38, Vermilion Area. Proposed depth 16,000 feet.

Zapata Offshore-Fremont Oil 1 (OCS 0172) State Lease 1446, Vermilion Block 86. Wildcat. Block 86, Vermilion Area. Proposed depth 13,000 feet.

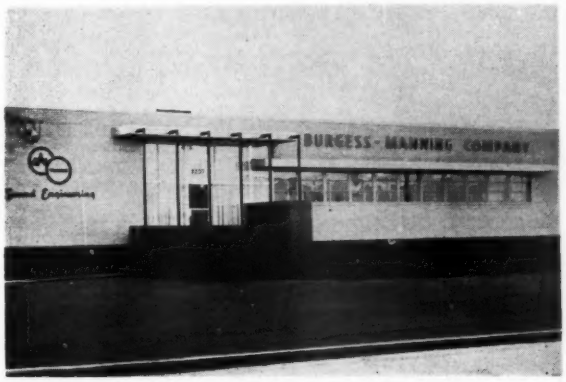
OFFSHORE COMPLETIONS

LOUISIANA

Cameron Parish

Magnolia Petroleum Co. A-2 (OCS 098) State Lease 1202, East Cameron Block 64. Dual gas. Wildcat. Total depth 10,795 feet. Perfs. 10,514-526 feet. PT 132 BDPD & 3,587,000 CFGPD on 13/64-in choke. TP 4235 pounds, Grav. 56.8, GLR 27,757-1. Perfs. 10,356-368 feet. PT 133 BDPD & 4,121,000 CFGPD on 13/64-in choke, TP 4680 pounds. Grav. 46, GLR 30,962-1. Block 64, East Cameron Area.

A-3 (OCS 089) State Lease 1202, East Cameron Block



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64. Dual Gas. Total depth 10,808 feet. Perfs. 10,619-631 feet.

Perfs. 9860-66 feet & 10,374-386 feet. Block 64, East Cameron Area.

Forest Oil Corporation A-3 State Lease 1337, East Cameron Block 4. Gas. Total depth 12,094 feet. Perfs. 9262-70 feet. PT 2,500,000 CFGPD on 8/64-in choke. TP 4500 pounds. Block 4, East Cameron Area. Contractor, Gulf Marine.

Jefferson Parish

Humble Oil & Refining Company C-6 (OCS 031) State Lease 803, Grand Isle Block 16. Location Abandoned. Total depth not given. Block 22, Grand Isle Area.

L-5 (OCS 031) State Lease 803, Grand Isle Block 16. Dual oil. Total depth 7600 feet. Perfs. 6984-94 feet. PT 202.32 BOPD & 103,000 CFGPD on ⅛-in choke, TP 1160 pounds. Grav. 35.7, GOR 509-1. Perfs. 6714-18 feet & 6724-29 feet. PT 190 BOPD on ⅛-in choke, TP 1000 pounds. Grav. 37, GOR 456-1. Block 22, Grand Isle Area. Contractor, Rowan Drilling Company.

K-5 (OCS 033 State Lease 802, Grand Isle Block 18 Dry. Total depth 11,603 feet. Block 19, Grand Isle Area. Company tools.

J-12 (OCS 034) State Lease 804, Grand Isle Block 16. Oil. Total depth 7865 feet. Perfs. 7360-65 feet. PT 161.07 BOPD & 28,320 CFGPD on ⅛-in choke, TP 840 pounds. Grav. 36, GOR 176-1. Block 23, Grand Isle Area. Company tools.

La Fourche Parish

The California Company 19 State Lease 1965, Bay Marchand Block 2. Oil. Total depth 7187 feet. Perfs. 6772-92 feet. PT 165 BOPD & 97,000 CFGPD on 15/64-in choke, TP 220 pounds. Grav. 27.3, GOR 588-1. From USC&GS "Pass 2" go N 89 deg 38 min 50 sec E 11,305.3 feet. Contractor, Rowan Drilling Company.

Gulf Oil Corporation D-4 (OCS 0263) State Lease 1423, South Timbalier Block 21. Temporarily abandoned. Total depth 12,010 feet. Block 21, South Timbalier Area. Contractor, Dixilyn Drilling Corp.

B-3 (OCS 0463) South Timbalier Block 135. Dry. Total depth 11,475 feet. Block 135, South Timbalier Area. Contractor, Penrod Drilling Company.

Barnwell Offshore, Inc. 4 State Lease 2511, Main Pass Block 25. Oil. Total depth 6875 feet. Perfs. 6222-28 feet. PT 121 BOPD on 8/64-in choke, TP 700 pounds. GOR 120-1. Block 25, Main Pass Area. Company tools.

The California Company H-3 (OCS 0371) State Lease 1277, Main Pass Block 69. Oil. Total depth 6898 feet. Perfs. 6433-47 feet. PT 160 BOPD on 9/64-in choke, TP 960 pounds, Grav. 30, GOR 2519-1. Block 68, Main Pass Area.

H-4 (OCS 0371) State Lease 1277, Main Pass Block 69. Oil. Total depth 7706 feet. Perfs. 7522-74 feet. PT 146 BOPD & 72,000 CFGPD on 11/64-in choke, TP 460 pounds. GOR 499-1. Block 68, Main Pass Area.

2 C-G-T Edith Howcott et al Unit 21, South Pass, Block 24. Oil. Total depth 7881 feet. Perfs. 7519-41 feet. PT 233 BOPD on 11/64-in choke, TP 675 pounds. From USC&GS Station "Scotts Canal Lite" go N 13 deg 7 min 30 sec E 4244.4 feet.

16 State Lease 2924, South Pass Block 24. Oil. Total depth 9307 feet. Perfs. 8716-34 feet. PT 530 BOPD on 12/64-in choke, TP 645 pounds. GOR 665-1. From USC&GS Station "Scotts Canal Lite" go S 50 deg 39 min 00 secs W (Grid) 6963 feet. Contractor, Lofland Bros.

C-7 (OCS 0385) State Lease 1069, West Delta Block 30. Oil. Total depth 7000 feet. Perfs. 6857-90 feet. PT

168 BOPD & 42,000 CFGPD on 8/64-in choke, TP 1390 pounds. Grav. 38, GOR 764-1. Block 29, West Delta Area.

C-6 (OCS 0385) State Lease 1069, West Delta Block 30. Dual Oil. Total depth 9009 feet. Perfs. 8669-85 feet. PT 156 BOPD on 10/64-in choke, TP 650 pounds. GOR 370-1. Perfs. 8210-32 feet. PT 177 BOPD on 8/64-in choke, TP 1390 pounds. Grav. 38, GOR 764-1. Block 29, West Delta Area.

CA-1 (OCS 0385) State Lease 1069, West Delat Block 30. Oil. Total depth 12,010 feet. Block 29, West Delta Area. Contractor, Penrod Drilling Company.

Gulf Oil Corporation 1 State Lease "QQ", Main Pass Block 48. Gas. Total depth 10,000 feet. Perfs. 3479-85 feet. PT 595,000 CFGPD on 11/64-in choke, TP 1260 pounds. From USC&GS Station "Sable-1924" go S 35 deg 18 min 56 sec E (true) 13,584.9 feet.

Hassie Hunt Trusts, et al D-10 State Lease 2484-BLD, South Pass Block 24. Dual Oil. Total depth 8901 feet. Perfs. 8344-48 feet. PT 325 BOPD on 11/64-in choke, TP 1100 pounds. Grav. 28.1, GOR 760-1. Perfs. 8769-75 feet. PT 211 BOPD & 133,000 CFGPD on 8/64-in choke, TP 1500 pounds. Grav. 31, GOR 641-1. From USC&GS "Scotts Canal Lite, 1933" go N 09 deg 47 min 55 sec E (true) 9479.1 feet. Contractor, Penrod Drilling Co.

D-11 State Lease 2484-B.L.D. Oil. South Pass Block 24. Total depth 13,000 feet. Perfs. 8758-66 feet. PT 211 BOPD on 10/64-in choke, TP 1400 pounds. GOR 876-1. From USC&GS Station "Scotts Canal Lite-1933" go N 04 deg 20 min 58 sec E (true) 9487.4 feet. Contractor, Penrod Drilling Co.

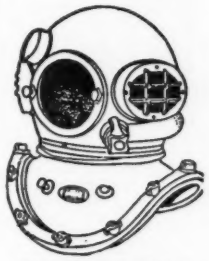
D-12 State Lease 2484-B.L.D., South Pass Block 24. Oil. Total depth 8939 feet. Perfs. 8496-83 feet. PT 292 BOPD & 152,000 CFGPD on 10/64-in choke, TP 1100 pounds, GOR 522-1, Grav. NR. Block 24, South Pass Area.

D-14 State Lease 2484-B.L.D., South Pass Block 24. Oil. Total depth 8900 feet. Perfs. 8758-66 feet. PT 324 BOPD on 10/64-in choke, TP 1200 pounds, GOR 648-1. From USC&GS Station "Scotts Canal Lite-1934" go N 07 deg 04 min 01 sec E (true) 7677.7 feet. Contractor, Penrod Drilling Company.

Ocean Drilling & Exploration Company 3 (OCS 0376) State Lease 1266, Main Pass Block 45. Dry. Total depth 10,400 feet. Block 45, Main Pass Area. Contractor, Southeastern Drilling Co.

Shell Oil Company 19 State Lease 1355, Main Pass Block 69. Oil. Total depth 8354 feet. Perfs. 8165-77 feet. PT

"Broken spud leg."



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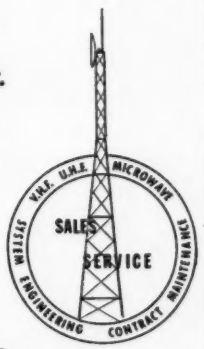

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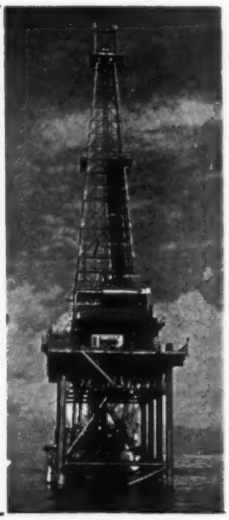

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152 BOPD & 148,000 CFGPD on 9/64-in choke, TP 1150 pounds. Grav. 31, GOR 962-1. Block 80, Main Pass Area.

21 State Lease 1357, Main Pass Block 69. Oil. Total depth 8306 feet. Perfs. 8002-20 feet. PT 162 BOPD on 7-64-in choke, TP 1020 pounds. GOR 408-1. Block 81, Main Pass Area.

22 State Lease 1357, Main Pass Block 69. Oil. Total depth 8153 feet. Perfs. 8018-20 feet. PT 413 BOPD & 152,000 CFGPD on 10/64-in choke, TP 900 pounds. Grav. 26.9, GOR 368-1. Block 81, Main Pass Area.

B-12 (OCS 0349) State Lease 1007, South Pass Block 27. Oil. Total depth 8353 feet. Perfs. 8310-25 feet. PT 167 BOPD & 352,000 CFGPD on 9/64-in choke, TP 1575 pounds. GOR 2108-1. Block 23, South Pass Area. 16 (OCS 0353) State Lease 1012, South Pass Block 27. Oil. Total depth 6950 feet. Perfs. 6810-25 feet. PT 182 BOPD & 58,000 CFGPD on 9/64-in choke, TP 700 pounds. Grav. 30.2, GOR 318-1. Block 28, South Pass Area.

B-16 (OCS 0350) State Lease 1008, South Pass Block 27. Oil. Total depth 8300 feet. Perfs. 6582-89 feet & 6591-97 feet. PT 158 BOPD & 46,000 CFGPD on 8/64-in choke, TP 710 pounds. Grav. 31.4, GOR 291-1. Block 24, South Pass Area.

B-17 (OCS 0350) State Lease 1008, South Pass Block 27. Oil. Total depth 7004 feet. Perfs. 6851-80 feet. PT 140 BOPD & 56,000 CFGPD on 9/64-in choke, TP 625 pounds. GOR 397-1. Block 24, South Pass Area.

17 (OCS 0353) State Lease 1012, South Pass Block 27. Oil. Total depth 6667 feet. Perfs. 6440-72 feet. PT 172 BOPD on 9/64-in choke, TP 500 pounds. GOR 500-1. Block 28, South Pass Area.

St. Mary Parish

Pure Oil Company 3 (OCS 0197) State Lease 833, Eugene Island Block 32. Dry. Total depth 11,375 feet. Block 32, Eugene Island Area. Plugged & abandoned. Contractor, Kerr-McGee.

Gulf Oil Corporation C-20 (OCS 0420) Ship Shoal Block 154. Dual Oil. Total depth 8504 feet. Perfs. 7526-42 feet. PT 213.42 BOPD & 89,200 CFGPD on 9/64-in choke, TP 950 pounds. Grav. 34, GOR 420-1. Perfs. 7090-7100 feet. PT 165 BOPD & 75,600 CFGPD on 10/64-in choke, TP 600 pounds, Grav. 34.4, GOR 462-1. Block 154, Ship Shoal Area. Contractor, Salt Dome Prod.

C-22 (OCS 0420) Ship Shoal Block 154. Dry. Total depth 8246 feet. Plugged & abandoned. Block 154, Ship Shoal Area. Contractor, Salt Dome Prod.

E-15 (OCS 0420) Ship Shoal Block 154. Oil. Total depth 6900 feet. Perfs. 6667-76 feet. PT 174 BOPD & 57,800 CFGPD on 9/64-in choke, TP 800 pounds. Grav. 27.9, GOR 332-1. Block 154, Ship Shoal Area. Contractor, Dixilyn Drilling Company.

E-17 (OCS 0420) Ship Shoal Block 154. Temporarily abandoned. Total depth 7403 feet. Block 154, Ship Shoal Area.

Shell Oil Company 2 (OCS 0587) Ship Shoal Block 139. Dry. Total depth 14,594 feet. Block 139, Ship Shoal Area. Contractor, Ocean Drilling & Exploration Company.

Vermilion Parish

Continental Oil Company A-4 (OCS 0487) Vermilion Block 120. Dual oil. Total depth 9444 feet. Perfs. 7444-64 feet. PT 174 BOPD & 161,000 CFGPD on 10/64-in choke, TP 1425 pounds. Gray. 42-5. Perfs. 7444-64 feet. PT 156 BOPD & 101,300 CFGPD on 8/64-in choke, TP 1225 pounds. Grav. 42.5, GOR 650-1. Block 120, Vermilion Area. Contractor, Kerr-McGee.

Phillips Petroleum Company 1 Rollover "A" State Lease 1089, Vermilion Block 39. Gas. Total depth 9000 feet. Perfs. 8470-8508 feet. PT 64 BDPD & 9,200,000 CFGPD on 23/64-in choke, TP 3150 pounds. Grav. 51, GLR 142,-857-1. Block 39, Vermilion Area. Contractor, Kerr McGee.

Gulf Oil Budget For 1958 Exceeds Half-Billion Mark

In announcing 1958's budget, Gulf Oil Corporation management took little cognizance of a reported recession or adjustment period. A record $692,000,000 budget was recently approved, the highest in the company's 56 year history.

Approximately $564,000,000 is ear marked for improvement and expansion of production, refining, transportation and marketing facilities. The other $128,000,000 is scheduled for geophysical explorations, wildcat drilling and additional efforts to increase company reserves.

Practically the total amount will be spent within the Western Hemisphere by Gulf and its consolidated subsidiaries in order to find, produce and deliver oil and its refined products to the consumer.

Dividends of $0.26 Per Share Announced by ODECO Head

In his semi-annual report to stock holders, Alden J. Laborde, president, Ocean Drilling and Exploration Company, announced a stock dividend of 26 cents per common share after preferred dividend requirements. This dividend was possible due to a net income of $386,315 on sales and operating revenues of $3,853,708 for the six month period ended November 30, 1957.

Laborde credited the $543,370 net income increase in the first half of the fiscal year, over the same period in 1956, to the continuing expansion and full employment of the company's contract drilling and service fleet operating primarily in the Louisiana offshore area. He also stated that "Exploration activities were likewise accelerated, resulting in the completion of three extension wells and three discoveries."

He also disclosed ODECO's plans to start drilling operations offshore in the Isthmus of Tehuantepec Area of Mexico in the Gulf of Campeche shortly after the first of April.

Additional exploration contracts for wildcat wells in the Lake Fortuna Area of St. Bernard Parish and in Block 66, West Cameron Area, and development wells at Whiskey Pass, Block 27, (Eugene Island) and Hog Island are also expected to be filled during the second half of the present fiscal year, it was announced.

Commonwealth Gross Income Up $1.5 Million For 6 Months

An increase in gross income of $1.45 million for the first six months of the 1958 fiscal year was announced by Commonwealth Oil Co. President Burton Liese.

The gain was from $2,265,163 in the last six months of the 1957 period to $3,715,492 in the first six months of the 1958 period.

Increase was attributed to a larger volume of gas handled by Commonwealth's offshore gathering system, higher revenue from the sale of oil and gas, and income from the offshore pipeline construction division.

Commonwealth assets as of January 31 amounted to $7.6 million, a net increase of about $500,000 since July 31, 1957.

Gas deliveries through company-owned offshore pipelines increased to 135 million cubic feet a day on January 31 as compared with 105 million cubic feet a year ago.

Roussel

Pedrick

Investment Firm Appoints Bond Department Managers

Two New Orleans men, F. Allen Roussel and Parks B. Pedrick, Jr., will manage the municipal bond department of Howard, Weil, Labouisse, Friedrichs and Company.

Roussel is new departmental manager of the New Orleans based investment firm, G. Shelby Friedrichs, a partner in the firm has announced. Pedrick was named co-manager.

A World War II veteran, Roussel served with the U. S. Coast Guard in both the Atlantic and Pacific theaters. In 1954, he became affiliated with Howard, Weil, Labouisse, and Friedrichs. He is a native of

(Continued on next page)

Rimrock Tidelands, Inc.'s oil concession in French Aquitaine Basin, obtained through the purchase of Mofag Oil Exploration Company, Inc., a Swiss corporation, is discussed by Rimrock president H. L. Rowley, and new coordinator of foreign relations Joseph L. Hargrove. Besides the one-third interest it holds in the 500,000-acre Aquitaine concession, Mofag owns two Swiss concessions. Drilling on the Aquitaine concession is scheduled to begin this Spring.

(Continued from preceding page)
Patterson, La., and attended Tulane University.

Pedrick, who came to the investment company in 1955, is a graduate of Tulane University and also a Korean War veteran. He is secretary-treasurer of the Bond Club of New Orleans.

Texaco Pays Stockholders $0.50 Per Share In Dividends

The Texas Company has declared a regular quarterly dividend of 50 cents per share, payable March 10, 1958, to stockholders of record February 7.

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Offshore Outlook

(Continued from page 46)

tions to proved reserves would be 75 trillion feet of gas and 8125 million barrels of liquid hydrocarbons. Adding the estimated known reserves as of January 1, 1957 and past production to the estimated future additions to reserves results in an estimated ultimate production of 87 trillion cubic feet of gas and 9125 million barrels of liquid hydrocarbons.

Band of shallow marine territory . . . Most of the oil that will be discovered off the coast of Louisiana in the foreseeable future, probably for the next fifteen or twenty years, will be in the relatively shallow water, much of it close to shore. Most of the past activity has been in this area which can be drilled with the use of ordinary drilling barges.

I feel certain that this band of shallow marine territory will be explored as intensively as the similar marsh land inland. The cost of exploration and development is about equal for both territories.

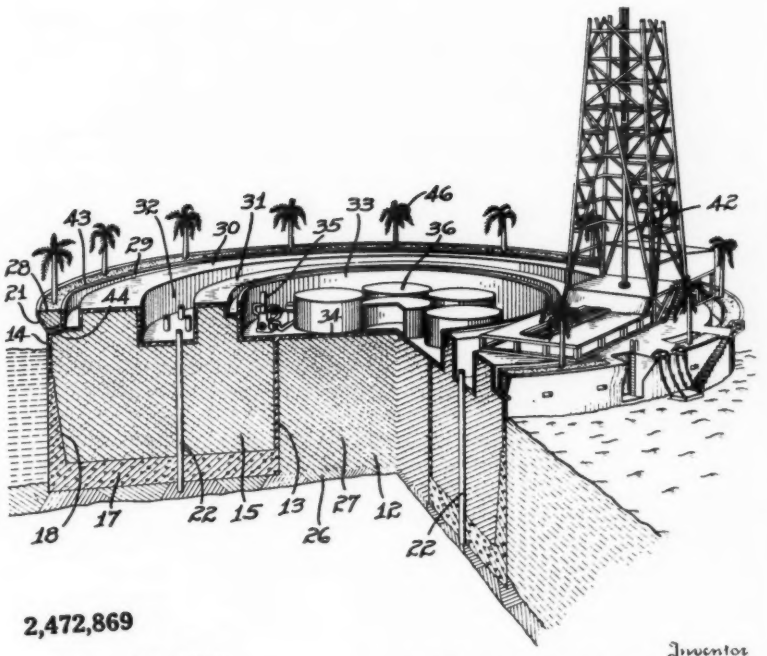
Drilling will continue more than 25 years . . . None of us would assume that offshore exploration drilling will be ended within 25 years.

Onshore exploration has been in progress since 1901 and may continue another 25 years or more. But we have to recognize that offshore exploration is far more costly than that inshore, and that it will continue to be so. Operators cannot afford to explore offshore any but really favorable areas.

Fifty trillion cubic feet of gas . . . In 1952 I guessed that offshore gas would approximate 50 trillion cubic feet. Now we have found 12 trillion. I feel sure we will find the 50 trillion, and may find very much more. I suggest that ultimately people living then will have the answer—and that it may be between my old guess of 50 and the so-called estimate of 240 based on the cubic mile approach.

Ten billion barrels of oil . . . As for oil, including other liquid hydrocarbons, the ratio of discovery onshore has been 20 billion barrels to 135 trillion cubic feet of gas.

Offshore, the ratio may be different, probably in favor of gas because of the greater depths. But if offshore we find 100 trillion cubic feet of gas, we are likely to find about 10 billion barrels of liquid hydrocarbons.



2,472,869

June 14, 1949.

Inventor
William J. Travers Jr.,

Steel reinforced concrete walls (18) (13) are constructed first. These walls are then fastened to the annular bottom section (17) containing the conductor pipes (22). This hollow ring shaped structure is towed to the drill site and submerged. Spaces (15) (27) are filled with sand or rock dredged from the ocean floor. Top sections (29) (30) (31) (34) (43) (44) are built from concrete pads, at the site. Equipment (35) (36) (42) and crew facilities are installed. Up to 100 wells can then be drilled through the numerous conductor pipes (22).

Patent No. 2,472,869

Island For Well Drilling

Submersible drilling island provides a base for directional drilling of up to 100 wells

TO PROVIDE a device for supporting well drilling apparatus in an offshore marine location, is the aim of inventor William J. Travers, Jr.

His patent covers the design features of a steel and concrete structure that can be fabricated, floated to a desired offshore location, submerged, and used to drill up to 100 wells.

Construction . . .The island consists of two cylindrical concentric walls joined by an annular floor. Thickness and height of the walls will be determined by the depth of water in which the island is to be placed. The vertical walls and the floor is further reinforced by radial reinforcing beams. Construction material is steel reinforced concrete. During construction, up to 100 large diameter conductor pipes are vertically installed within the area between the two walls. Each of these evenly spaced pipes may be used as conductor pipe for an individual well after the island is in position.

After fabrication the island is floated, and tugboats may tow it to the desired location. Ports are then opened, admitting water into the hull and submerging the island. After the ring like structure is positioned on the ocean floor, the water in the annular space between the walls is replaced with sand or rocks dredged up from the ocean floor. The well in the center of the island is also filled with the same material to prevent lateral movement of the entire structure.

Once the island is in position, a

(Continued on next page)

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(Continued from preceding page)

cap of suitably designed concentric concrete pads is constructed on the site. This island cap provides a base for drilling equipment, crew quarters, mud tanks, and storage facilities.

Well drilling . . . It is estimated that over 100 wells can be drilled from a platform 200 feet in diameter. Four simultaneous drilling operation would be possible from this size and shape island. Directional drilling operations would be carried on through the conductor pipes in a normal manner. It would be necessary only to move the derrick over slightly after each well completion, in order to line up over the next conductor pipe.

Special features . . . An important advantage of the annular buoyant structure just described resides in the provision of the central opening. If this opening were to be omitted and the floor continued completely across the structure in circular form, the buoyant forces acting on the floor would require much larger reinforcing beams in order to provide sufficient strength over the increased span. Floor beams of such large size would be detrimental in that the increased weight would more than offset the increased buoyancy, with the result that the structure would float much lower in the water, and the hazard of capsizing or foundering before reaching the desired location would be greatly increased. Furthermore, the additional cost of greatly increasing the size of the floor beams would be uneconomical.

It is contemplated that the use of reinforced concrete for the side walls and floor of the structure will be sufficiently resistant to wave action, weather and chemical erosion to remain in service during the useful productive life of the developed area.

After the oil strata has been depleted, the island could be converted into a park for recreational purposes or into a small boat anchorage. And if such use is adopted, the scupper or outside drainage rim can be used for ornamental planting of trees, such as the palm trees pictured.

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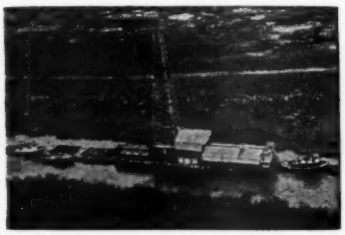
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Otis Solomon Goes To Sea

Highlights of a colorful oilfield career are—the job he lost—an early offshore venture—a near disaster in South Texas

AFTER losing his first oilfield job because he was "too green," Otis M. Solomon went on to become one of the most diversified and colorful rig chiefs manning Penrod Drilling Company's offshore oil fleet.

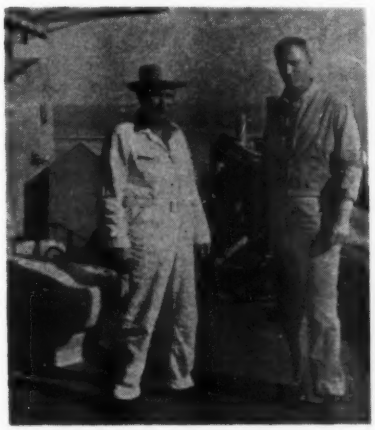
In 1930, young Otis left his home at Gilmer, Tex., to take a job roughnecking at Zwolle, La., for Lanier Oil Operator. Ten days later, he was jobless again. The reason—he just didn't have enough experience.

But Otis liked the oilfields, and he went back to East Texas and got a job on a "poor boy" well.

"All I got out of that job was experience," he laughed. "But when I left there, I could keep up roughnecking with most anybody."

Now after 28 years in the oilfields, he believes he would be lost anywhere else. Pushing on **Rig 51,** he alternates with co-pusher W. J. "Sonny" Haley, seven days on and seven days off. **Rig 51,** which is drilling for The California Company in Block 30 of West Delta Area off Louisiana, is expected to remain in the block for at least three or four more months.

Offshore work has its moments both risky and hilarious; and Otis can never forget the day a driller was coming out of the hole and his rotary slips stuck in the rotary.



Aboard RIG 51 Toolpusher Solomon in white coveralls goes over drilling operations with Lewis Crewes, engineer for The California Company.

Three roughnecks thought their driller had everything under control, but they were surely dismayed to find they were riding up on the rotary. "You should have seen them unload," the veteran "pusher" laughs, "especially that fat one."

Otis Solomon got into offshore work early—before the days of mobile units and self-elevating platforms. He first took to the water in September, 1941, with O. W. Dyer, Jr., helping drill a Gulf Oil Company venture in Timbalier Bay.

He recalls the rig was a Waukesha electric power rig; the derrick and drawworks were on pilings; the motors, pumps, and mud pits were on a floating barge.

Every time it came up a spell of bad weather, the wind caused the motor barge to break away from the rig.

If miracles do happen in the oil fields, Solomon will pit one of his personal experiences against anyone's. Down in south Texas in 1940, he was helping drill a well on the St. Charles Ranch when it blew out.

While the crew pulled the drilling equipment away from the hole, Otis was laying a two-inch water line so they could put a spray of water on the gas to prevent it from catching fire.

"I was about 20 feet from the hole," he relates, "and in mud up to my waist when it caught fire—but I got out!"

Today, he believes that fire from gas and salt water blowouts still constitute the greatest menace to a drilling crew.

Another time, Otis's crew was moving Penrod **No. 44** when bad weather struck off the coast of Mississippi. The tugboats decided to turn around and make for the haven of Gulfport Harbor.

In the process of turning around, the rig tilted, and for a few sickening moments seemed destined to topple and deposit its crew in the Gulf of Mexico. It righted itself, however, and the only loss was 25 joints of pipe and 12 drill collars which slid overboard.

They eventually got into Gulfport, and about half the crew quit right there before they could leave.

Offshore veteran, Otis Solomon, relaxes for a moment aboard the mobile unit he guides. The 28-year oilfield career man, who helped drill an offshore well in 1941, prefers pushing at sea because it is more interesting and he doesn't have to move as often.

Blue-eyed and brown-haired Otis observed his forty-seventh birthday January 26. Since that memorable day at Zwolle he has ascended the gauntlet of oil jobs from roughneck to driller to toolpusher and drilling superintendent.

Most of his 28 years of experience have been spent with Sam Cook, O. W. Dyer, Barnwell Offshore, Inc., and Penrod.

When he made the change over from onshore to offshore pushing, Otis found the work was more interesting and convenient, too, because he didn't have to move as often. To his seasoned eye there is no more fascinating sight than a long string of casing run in the hole without any trouble whatsoever. As drilling is carried into deeper and deeper ocean waters, he looks forward to the day when the 500-foot mark will be recorded, and he predicts that is less than ten years off.

On his days off Otis likes to fish or picnic with his wife and three sons, or he may catch up on odd jobs around home, read Perry Mason mysteries, or watch TV. He has a married daughter in Ft. Worth, Mrs. A. W. Ivy, mother of his two grandchildren, Dwight and Vicki.

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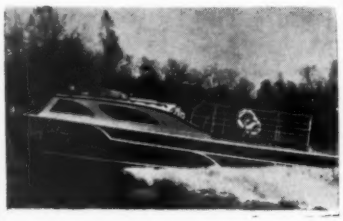

the Sandy Candy . . .

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Service Personalities

(Continued from page 63)

advertising and public relations manager.

Also, Robert O. Isham of Fort Worth has been moved up to vice president in charge of finance for Weatherford Oil Tool Company, Ltd., which has headquarters in Edmonton, Alberta, Canada. Also, in the Edmonton office Robert P. Turnbull was named vice president of sales.

Longino came to Weatherford in 1954 as a sales and service engineer. Since June of 1955, he has been Southern division manager at Corpus Christi.

Willmott Is Sales Engineer For Napier's Marine Division

Colin Willmott has been appointed sales engineer in the marine division of Napier Engines Incorporated to cover the Gulf Coast and Southern states.

Willmott

Willmott had previously been sales engineer in the commercial division of Napier, devoting his time exclusively to Deltic Engines for high speed craft.

He received his bachelor of arts degree in engineering from Cambridge University, England, in 1954, and acquired his graduate apprenticeship in engineering with D. Napier & Son, England, in 1956. During his apprenticeship he spent some time working on Napier gas turbine engines and on the Deltic marine 2-stroke diesel engine.

From 1950-51, he was employed as a garrison engineer in Egypt with the British Corps of Royal Engineers.

Menge Heads Newly Formed Midstream Service Company

Peter Menge is manager of Midstream Service Company of Harvey, La., which has been established to supply food, diesel fuel, lube oil, and water to large tugs that are in tow in the New Orleans area.

Tugs can be serviced without stopping, and the new company can also service offshore supply vessels that are taking on cargo. Headquarters is Harvey Canal Ship Service on the Harvey Canal.

Ottinger Made Regional Head In Jones & Laughlin Change

Jones & Laughlin Supply Division has announced the appointment of D. T. Ottinger to regional manager in the Gulf Coast area with headquarters at Houston.

Ottinger

Ottinger, former district sales manager of the South Texas district, was named as part of a company change in organization of field sales management. Result of the move has been formation of three new regions covering 19 districts and 42 sales offices.

Heading the Southwest region which has its headquarters at Midland, Texas, is F. L. McFarland. In the new Rocky Mountains region, D. H. Carson has been selected as regional manager.

Ottinger will supervise three districts: the Southern Louisiana district, C. E. Rogers, manager; the South Texas district, L. P. Mackey, manager; and the Southwest Texas district, C. H. Maxwell, manager.

Another Gulf Coast appointment places J. N. Ryan as salesman at Laurel, Mississippi.

Kelinske Named Sales Agent For Briner Paint Company

Felix Kelinske has been named industrial sales representative for Briner Paint Manufacturing Company of Corpus Christi, Texas in a move to expand the firm's sales department.

Kelinske

Paul H. Laudadio, former industrial sales representative has been promoted to industrial sales manager. He will divide his time between the Corpus Christi and Baton Rouge, Louisiana, sales offices.

Kelinske, who has been with Briner for 5½ years occupied with research, formulating, and technical service work, was born in Texas and attended Del Mar College in Corpus Christi.

He holds the rank of Captain in the USAFR and is a member of the National Association of Corrosion Engineers.

(Continued on page 82)

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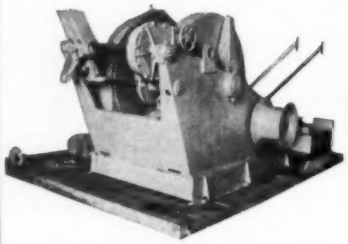

50,000 lb. line pull Jaeger stern anchor winches. Drum size 25" X 25"—will spool up to 1900' of 1¼" cable. Complete with torque converters and heavy duty Continental Industrial gas engines model R-6602 —6 cyl—153 HP—radiator cooled. Torque converters will fit 6-71 diesels for conversion purposes. Units complete with level-wind devices. Excellent for pipe laying barges; mooring storage barges; tenders; and all types of floating rigs. Overall, front-to-back, 13' 9¼"—overall width 9'. Buy now and get what you want.

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Gardner-Denver vertical pump–8" suction–6" discharge–1500 GPM–56' head. Powered by 30 HP type DN Century motors–230 VDC–frame 375-S. Controller Cutler-Hammer full magnetic, bulletin 6942–drip-proof, with push-button control, overload & low voltage protection. Excellent for aux circulating, ballast, booster, etc. NEW, in original crates.

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(Continued from page 80)

Magoffin Is Sales Manager For European Branch of BJ

Appointment of J. P. Magoffin as European sales manager of Byron Jackson Tools, Inc., has been announced by Garth Nicholson, vice president and general manager.

Magoffin

A 15-year veteran with the company, Magoffin fills a new office established to provide a closer relationship between the firm and its European and Middle East customers.

Prior to his new appointment, Magoffin served as new-product sales manager. Previously he had also been the first regional manager of the Rocky Mountain and Canadian territories.

He was sales manager of the Patterson Ballagh organization at the time it became part of Byron Jackson, and he opened the first mid-continent office that combined the products and services of the two companies.

Roach And Davis Take Jobs With Otis Engineering Firm

Malcolm B. Roach has been appointed general sales manager for Otis Engineering Corporation, Dallas oil well tool manufacturing and service firm.

Robert H. Davis, Jr., former labor relations analyst with Convair Aircraft at Fort Worth, is the company's new personnel director. He has also served as special agent for the F.B.I. for six years.

Roach was president of Dewey Supply Company, Tulsa, before joining Otis Engineering. Also, he has served as regional sales manager for the Dayton Rubber Company in Dallas and Passaic, N. J.

D. L. Glaser Named King Of Mardi Gras Pageantry

Donald M. Glaser, Lafayette businessman prominently associated with the South Louisiana oil industry, was His Majesty, Coeur de Leon, sixth king of the Troubadours presiding over the Mardi Gras season there.

He was host to hundreds of Louisiana and Texas oilmen and their families who participated in the celebration.

Theme of carnival ball was "A Spanish Holiday," and entertainment included a mock bull fight, a fiesta parade, and dancing and singing Spanish girls. Highlight of the ball was a "bird hunt," in which elaborately-gowned princesses of the pageant portrayed decorative birds.

Participants and guests of the Mardi Gras celebration attended a reception at the Glaser home which featured authentic Spanish cuisine.

The pageant was sponsored by the Lafayette Town House, and it was dedicated to Mrs. Frances Parkinson Keyes, noted author of novels on Louisiana.

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"Yes, I am, Your Honor," he replied, "but what can I do? She's too ignorant to do anything better."

First she: "I trust I make myself plain."
Second she: "Nature did that, dearie."

Bridegroom: How much do we owe for the room?
Hotel Clerk: Oh, that will be three dollars apiece.
Bridegroom: Good! Then this fifty should just about cover it.

The wife of a crewboat captain was continually nagging her husband about leaving her unprotected among the alligators inhabiting a nearby swamp.

The captain bought a huge old brass bell, mounted it on a tall pole near the front porch, and told her to just ring the bell if an alligator approached the house, and he would hasten back from the drill barge several miles away, but within sound of the bell.

About a mile out, the bell rang—the captain rushed back to find his wife perfectly calm.

"I was just testing the bell," she said.

When the crewboat was about three miles out, the bell rang again—the captain rushed back to find his wife still unharmed and perfectly unperturbed.

"It rang accidently," she said. "I was cleaning it."

"Don't ring the bell unless an alligator approaches. Don't touch it unless you are actually in danger," he shouted.

Just as he approached the drill barge, the bell rang again.

He rushed back just in time to see a huge alligator drag his wife below the surface of the murky water of the swamp.

"Now, that's more like it," he hollered.

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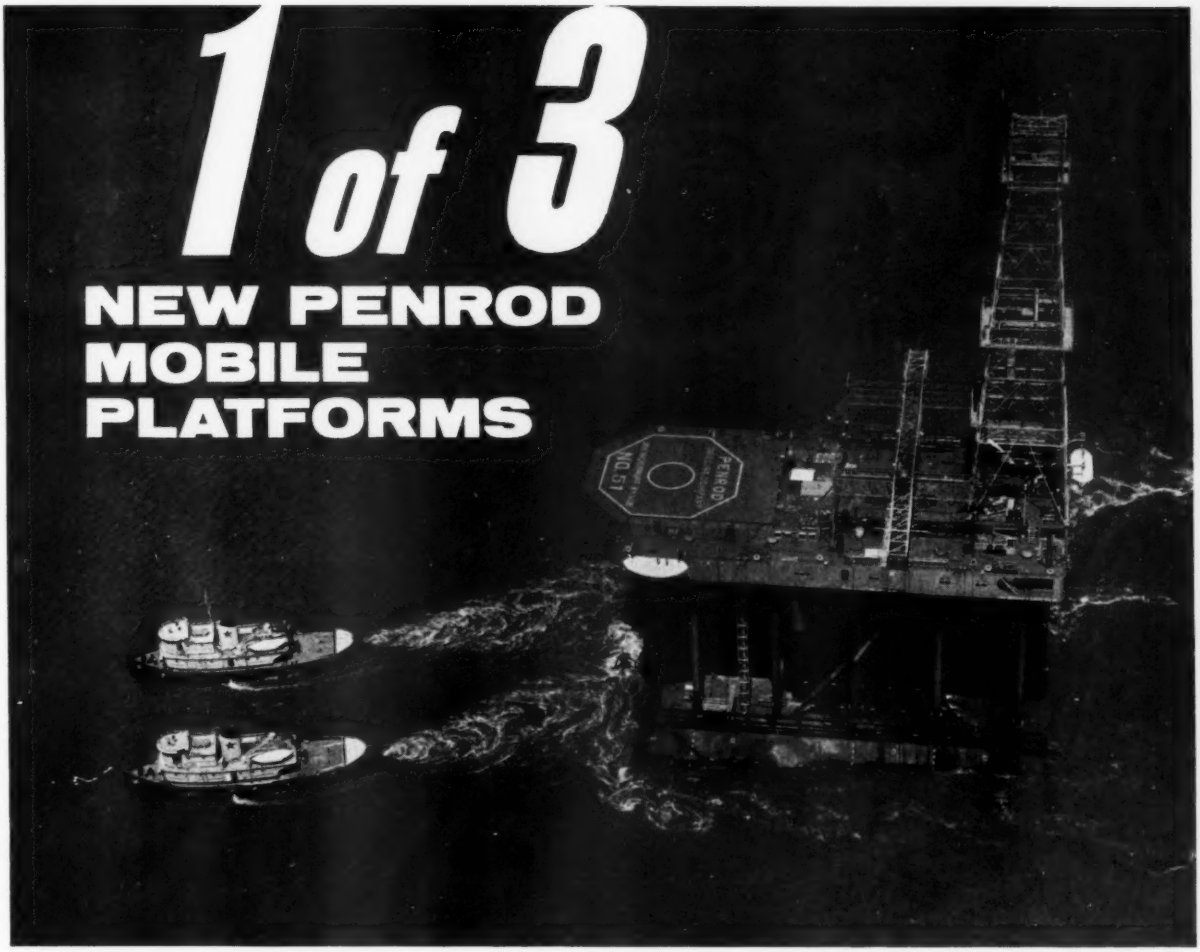
1 of 3

NEW PENROD MOBILE PLATFORMS



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At the huge dry dock of the New York Shipbuilding Corp., construction is now under way on the 60,000 ton aircraft carrier, the "Kitty Hawk."

For this tremendous construction project the two new, 80 ton Whirleys, shown in the center of this illustration, were added to the existing fleet of Clydes.

$120,000,000 construction project uses five Clyde Whirleys

With a four acre flight deck one-fifth of a mile long and an overall height equal to a twenty-five story building, this $120,000,000 construction project requires a tremendous amount of material handling know-how. Placing 52,000 tons of structural steel, 1,000 tons of aluminum, 180 miles of piping, 290 miles of cable . . . keeping materials moving on schedule . . . this is the assignment handed the five Clyde Whirleys by New York Ship.

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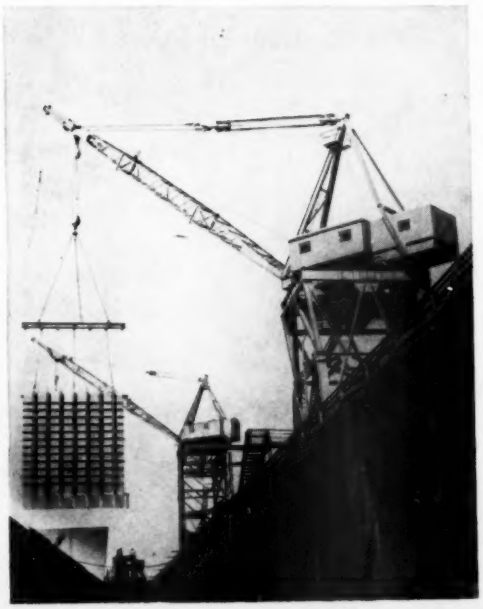
Whatever your material handling problems, it will pay you well to investigate the complete line of Clyde's *performance-proved* Whirleys, Hoists, Derricks, Whirlettes, Car Pullers, Unloaders, and deck and dock material handling equipment. The use of Clyde's Engineering Department is yours without obligation.



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